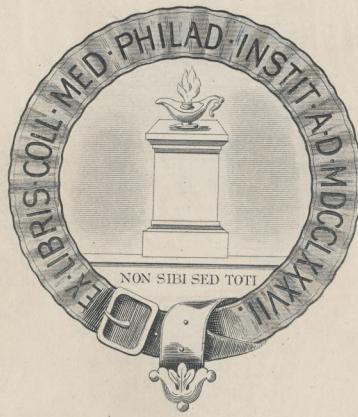




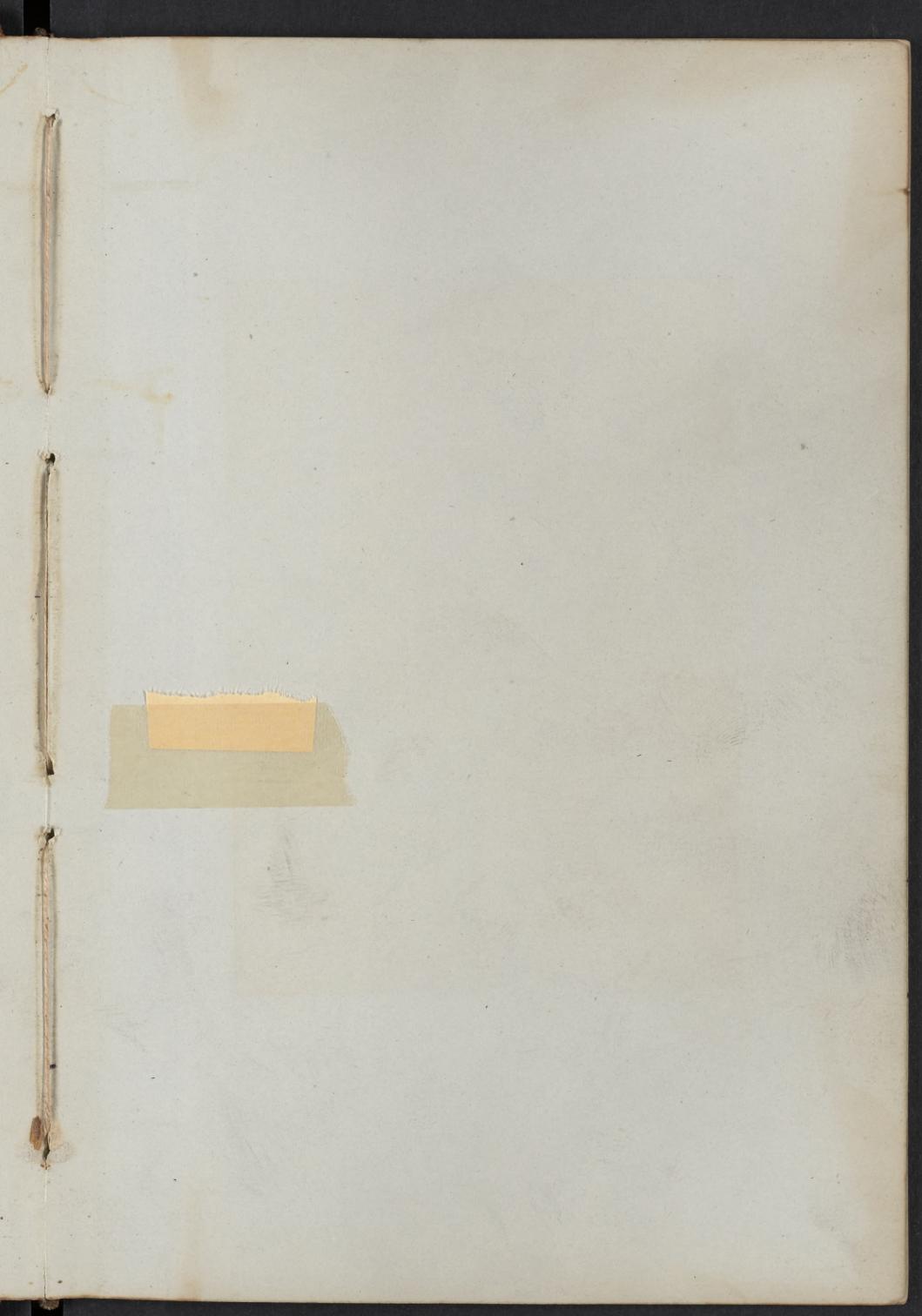
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C



Class 10a No. 18.

A



Lecture
by
Joseph Carson, M.D.

Emetics

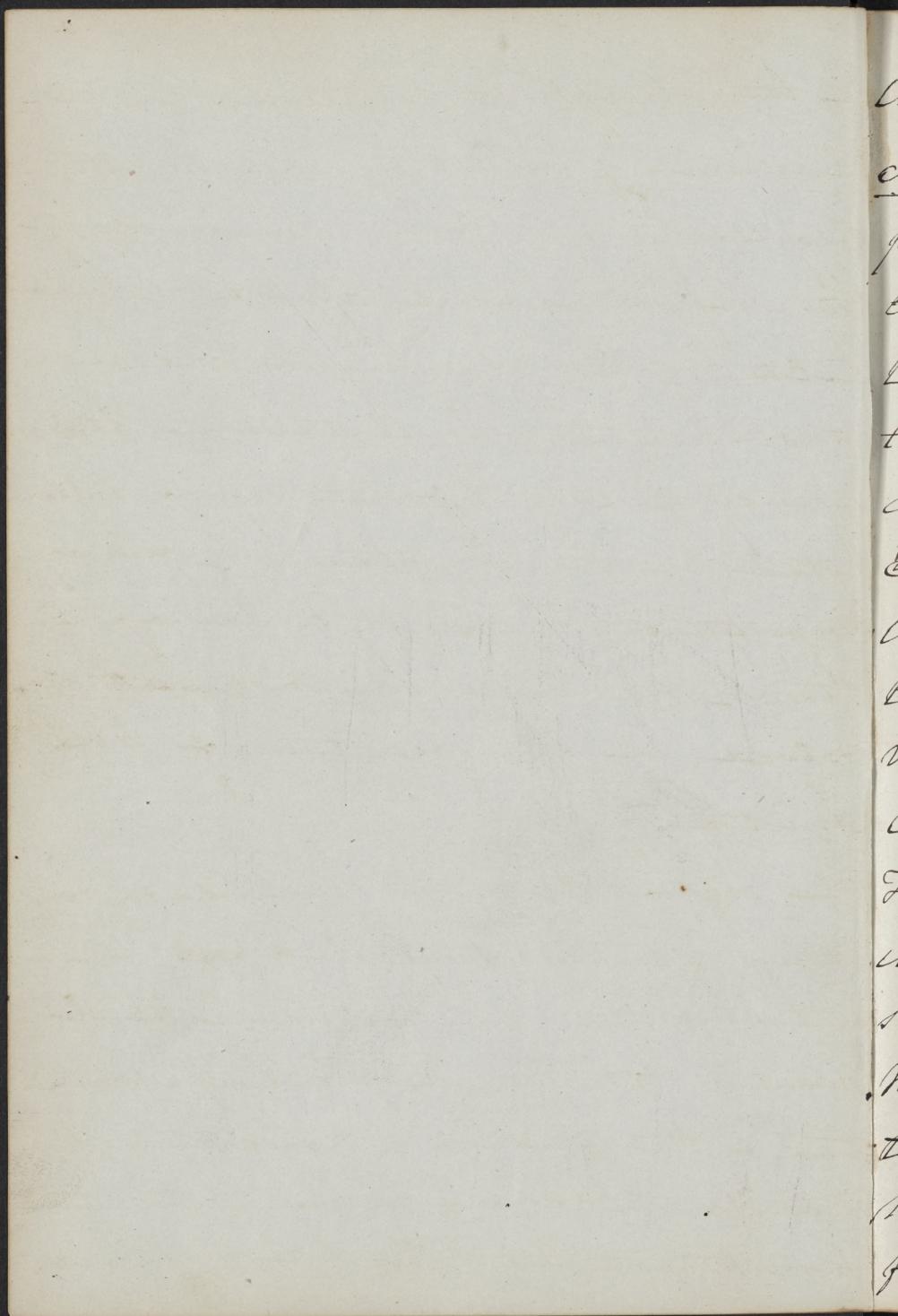
This class of medicinal agents derive their name from the Greek word cemes.

They may be defined to be substances that produce such an impression upon the stomach as to cause the expulsion of its contents through the cardiac orifice, the æsophagus and mouth.

The act itself is termed vomiting.

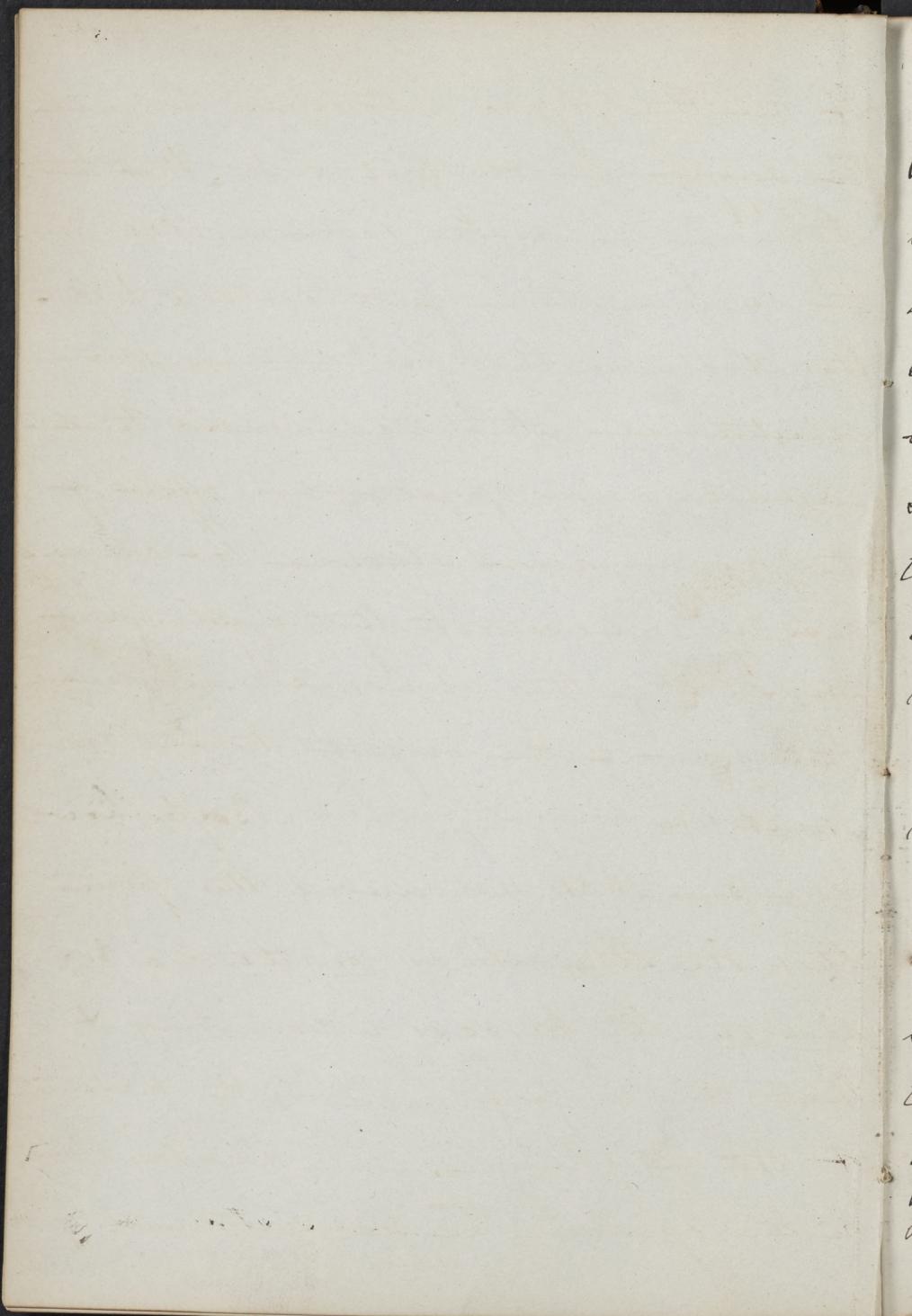
It is an highly complex operation requiring the concurrent and simultaneous movement of several organs, and therefore especially demanding attentive examination.

Much discussion has been elicited

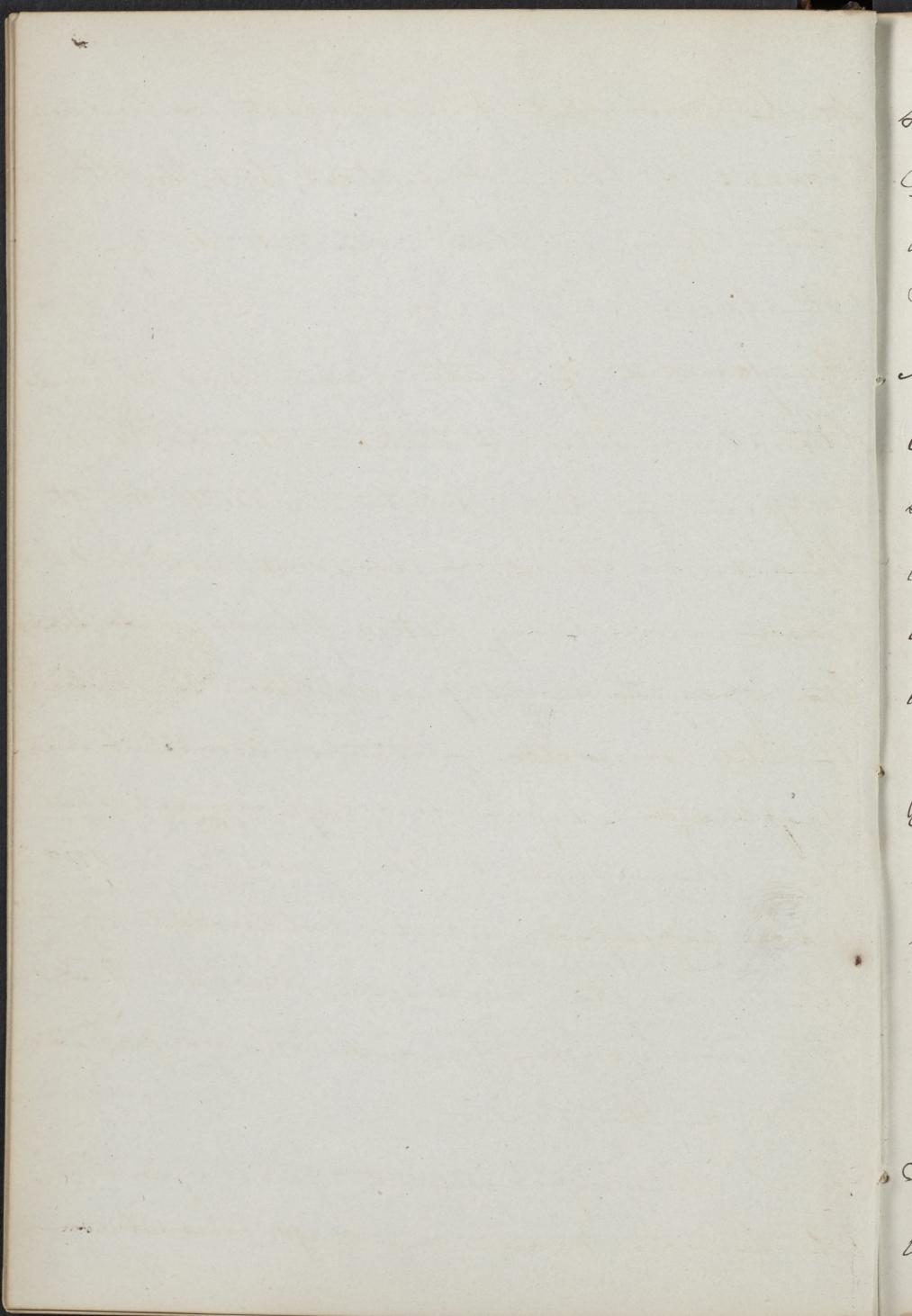


in the attempt to determine the mechanism of vomiting, and no little perplexity has been occasioned by the conflicting and opposite interpretation of the phenomena presented to observation. To determine the agency of the different organs interested in the operation is of primary importance, previously to an exposition of the combined movements involved in the operation of an emetic.

The organs that are involved in vomiting are the stomach & parts constituting the upper portion of the alimentary tube, the respiratory apparatus, & the media of association, the nervous masses & nerves distributed from them to the organs first mentioned.



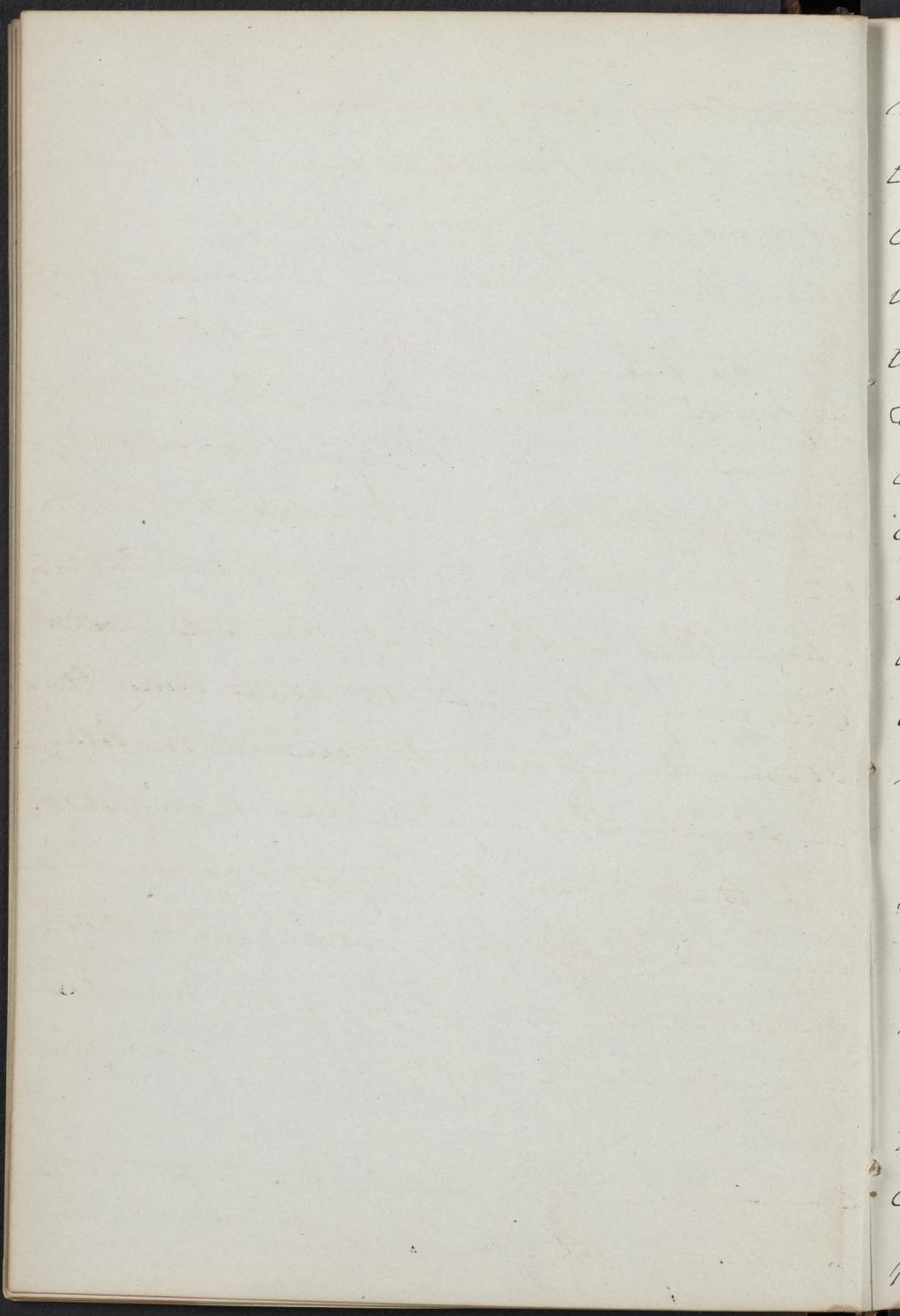
Of all the organs interested, it would be supposed at first sight, that the stomach is most instrumental in the elimination of its contents. Indeed the doctrine that for centuries was entertained attributed even to a sudden and spasmodic effort of the organ, and allowed but an accessory influence to the diaphragm & muscles of the abdomen. Under this view of the subject the stomach must be powerfully active. Boyle however in 1681. advanced the opinion that the stomach is inactive or passive in the process of vomiting & that this is performed by the pressure of the diaphragm and muscles alone. In this opinion he was sustained by -



such eminent physiologist as Claude
Serradell & John Hunter, but on the
other hand was combated by -
Haller

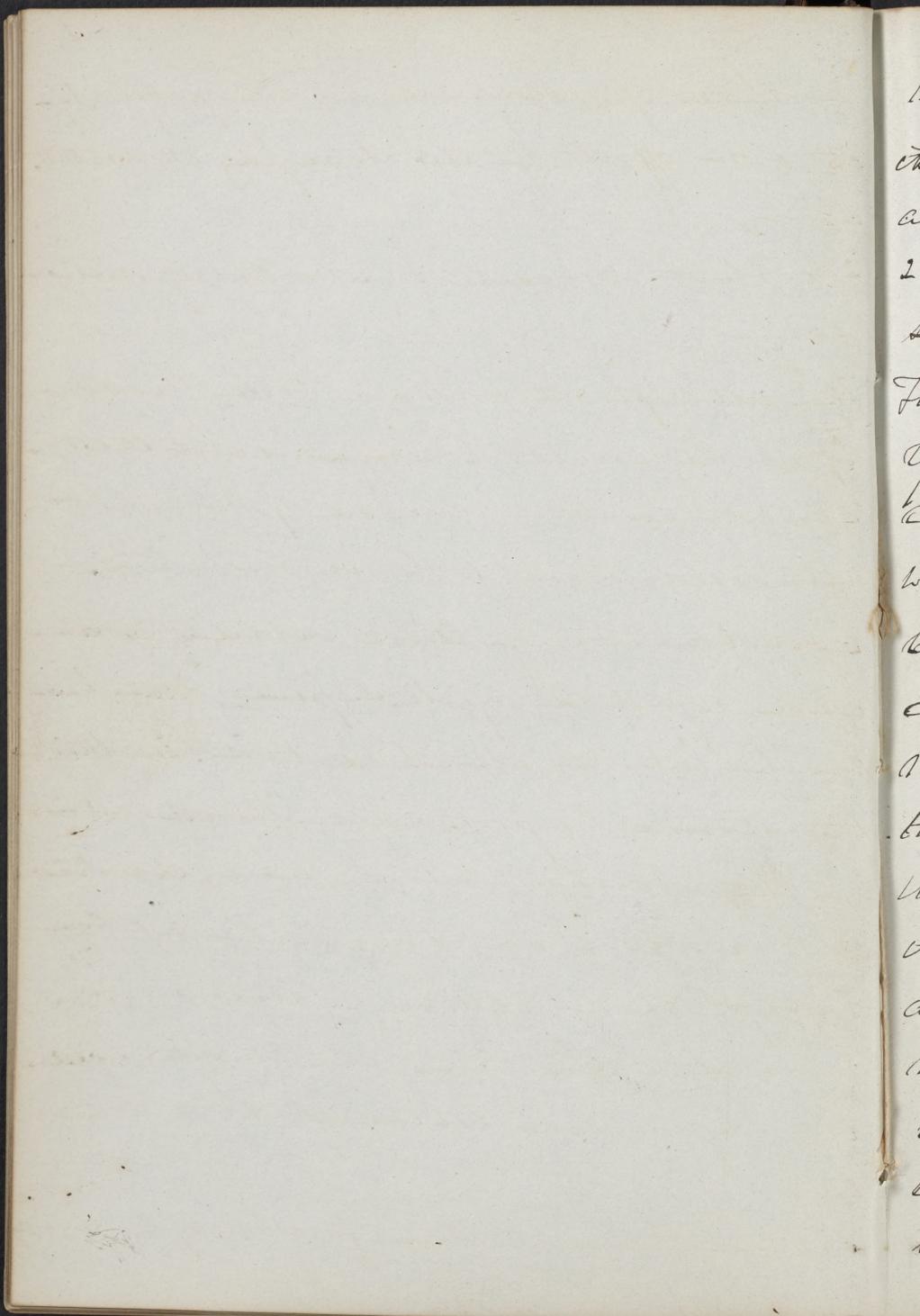
Majendie of late years has revived
the discussion, & taken the lead in -
support of the doctrine, that the sto-
mach is inert & does not contract -
when vomiting takes place, but that
the operation depends upon the action
of the muscles of the abdomen & the
diaphragm. Upon his experiments which
were presented to the public in 1813 -
since repeated and contended by -
others is the evidence based that
is now brought forward in confirma-
tion of this view.

From the experiments of Majendie,
which were made on dogs, in whom



vomiting was produced by injecting tartar emetic into the veins.— It was clearly demonstrated that when the stomach was removed from the cavity of the abdomen & placed beyond the action of the muscles— it was not able to expel its contents— although retching continued to exercise the eructive influence,— and that when the abdominal muscles were cut away— but at the same time the stomach allowed to remain in situ— a similar incapacity was manifested— but that when the organ was removed and a bladder containing water substituted, the action of the muscles was capable of emptying it by compression.

From these results two facts are positively established—



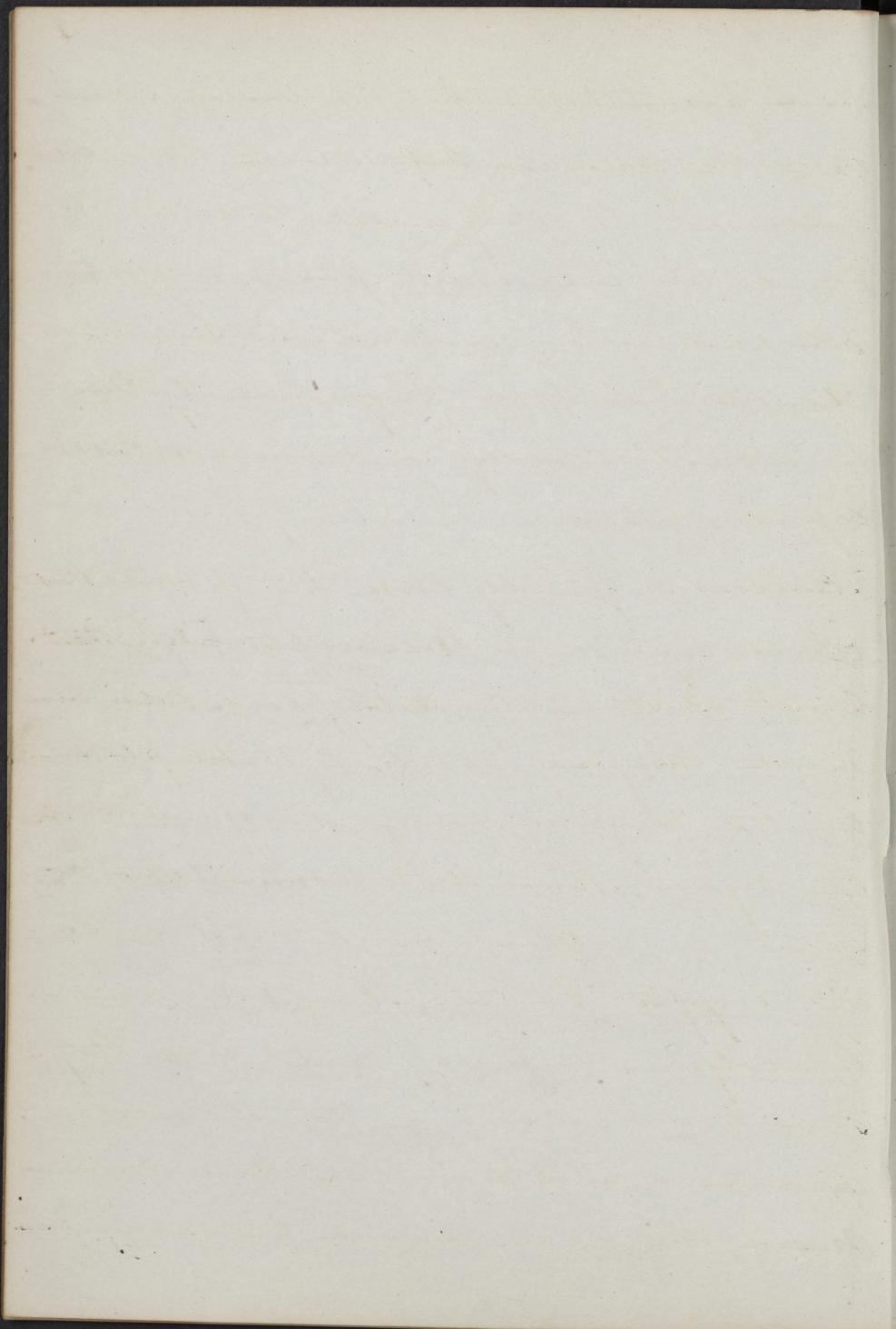
1st That the stomach is incapable by-
its own efforts of discharging its contents.
and,

2d. That pressure is absolutely neces-
sary.—

The attempts that have been made
by Chaignaut to invalidate their
correctness were deemed by those who
witnessed them to be inconclusive.—

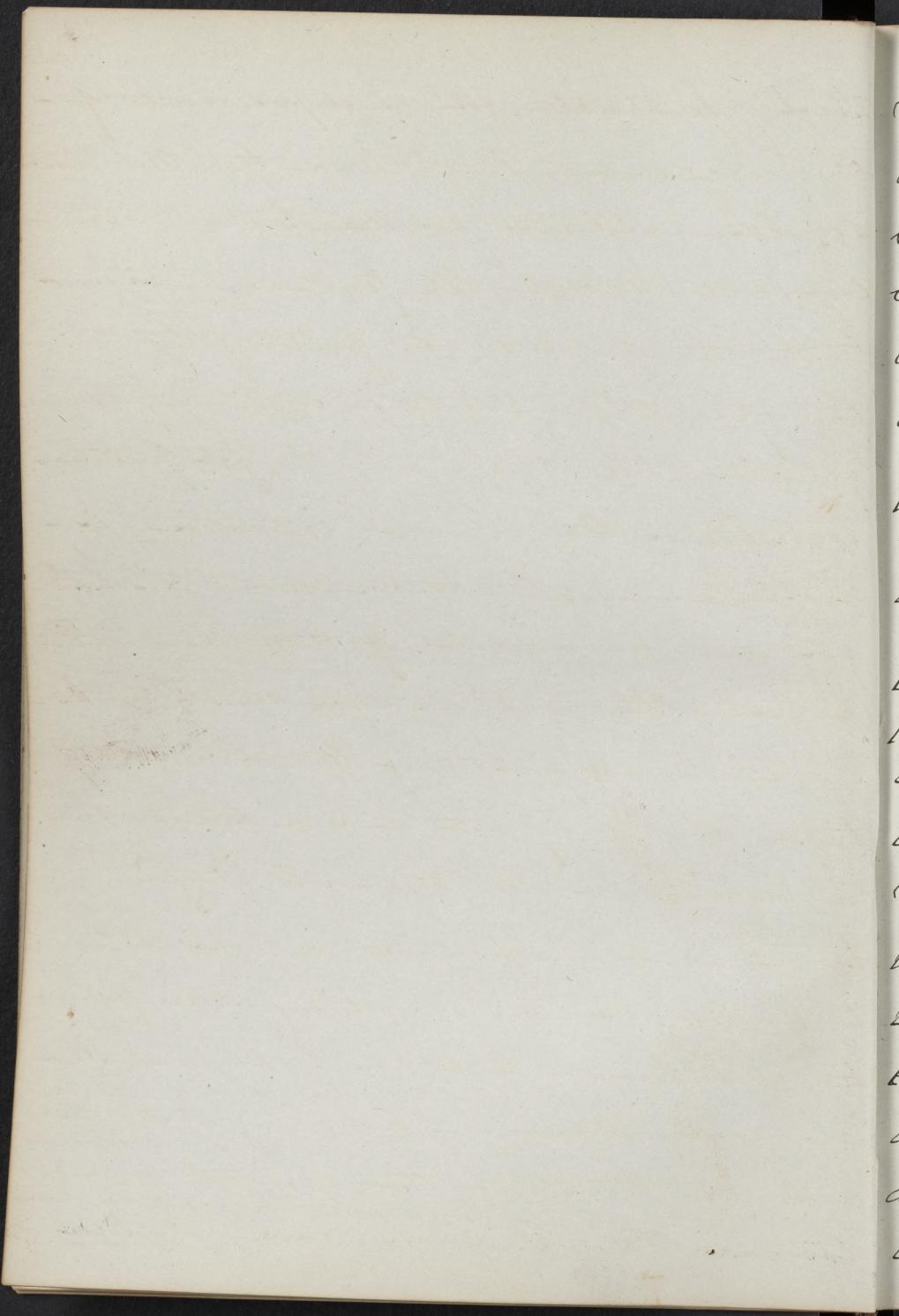
Corroborative of its validity is a
case reported by M. Lapine, that has
much interest attached to it. In this
the stomach protruded through a wound
in the abdomen which had divided
the parieties & vomiting could not be
accomplished, although strenuous
muscular exertions were made, until
the organ was returned to its loca-
tion.

Settled then as these facts may be regard-

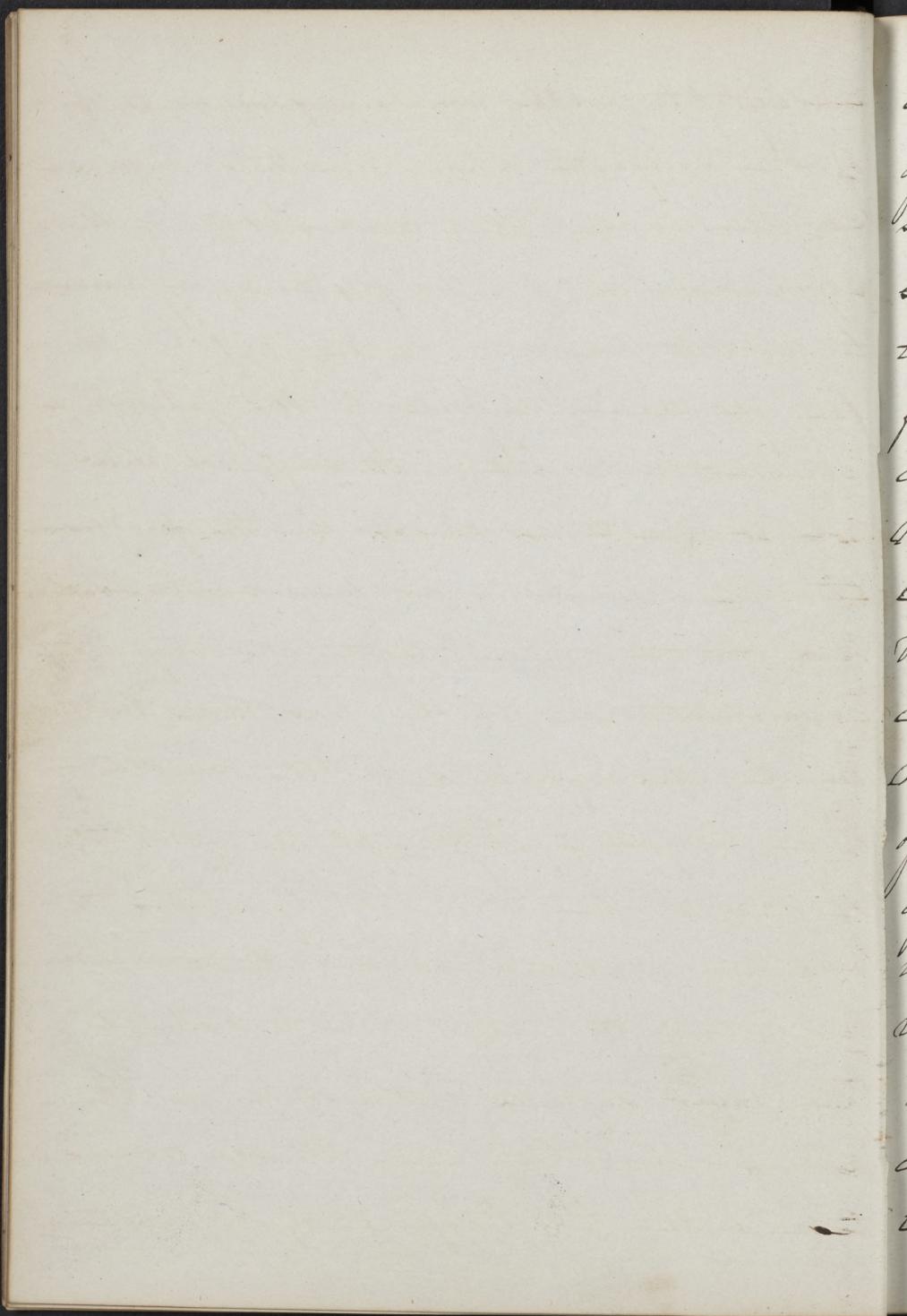


ded, from them the conclusion can -
not be drawn, but which has been
expressed by Majendie, that the sto-
mach is an inert passive agent
not undergoing contractions, such a con-
clusion has been disproved by the
limited testimony of numerous able-
experimenters.

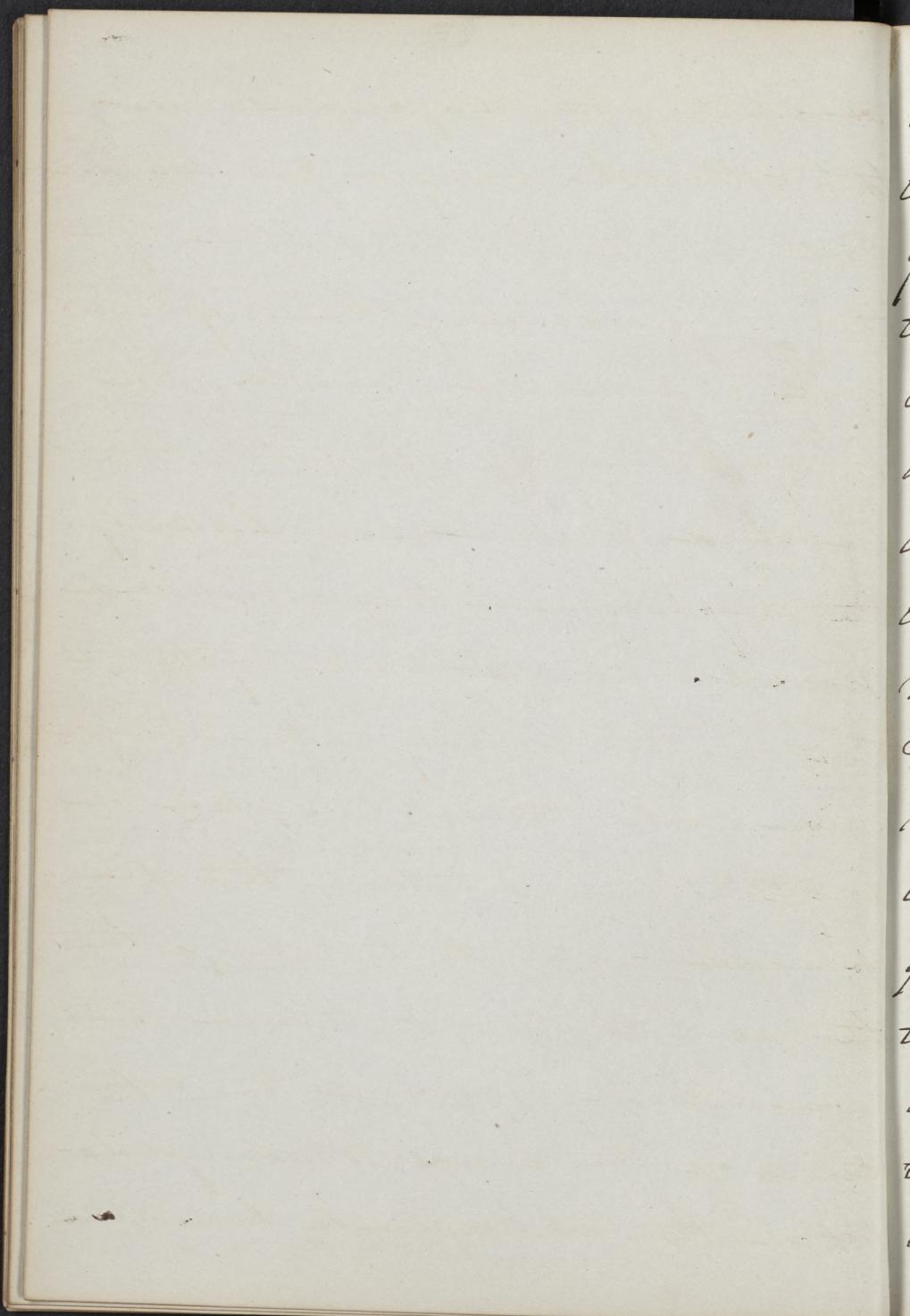
Haller originally took the ground that
where there was muscular fibre, there
must exist contractility, or ^{t that} contractions -
must therefore naturally take place -
in the performance of the functions of
the organ. But that contractions do -
occur is settled on the best author-
ity. Cheffer Portat, Clagett and -
Rudolphi expressly state that they -
saw the motions of the stomach -
during vomiting. That these move-
ments had a reverse tendency is -



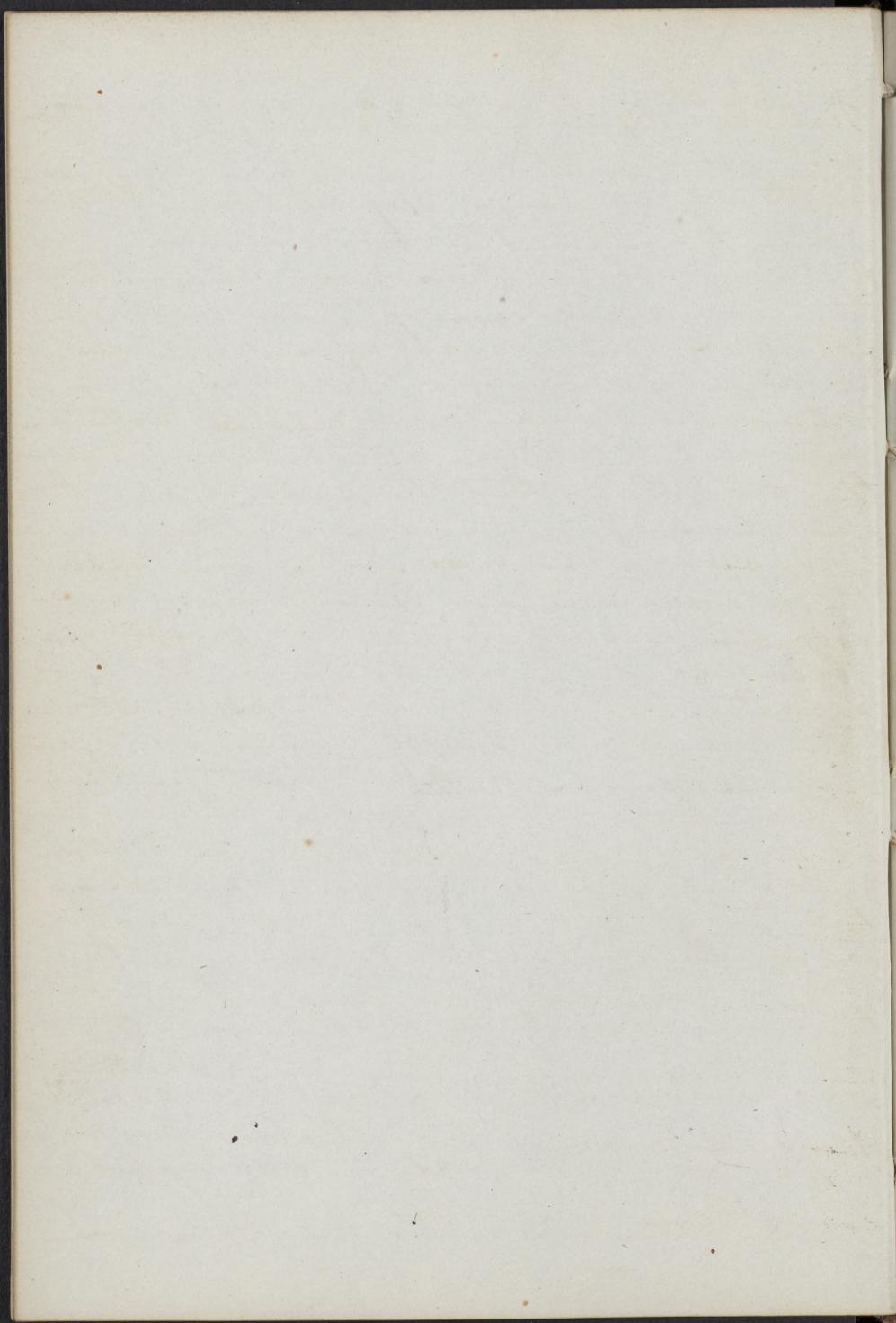
highly probable, for independent of -
the argument that had this not been
so, the contents would have been
expelled through the pylorus, we know
that the duodenum participates in -
the operation & bile is constantly agi-
tated int. the stomach, yet further -
sometimes the small intestine is -
involved, and steroraceous dischar-
ges are produced. If then an anti-
peristaltic action can exist in the
continuous portion of the alimentary
tube, why may not a similar motion
be present in the stomach itself? -
weak and ineffective as such contrac-
tions may be in vomiting, etc. from
the statement that has been made, we
are warranted in believing that it
aids in thrusting the contents forward
towards the cardiac orifice. Miller



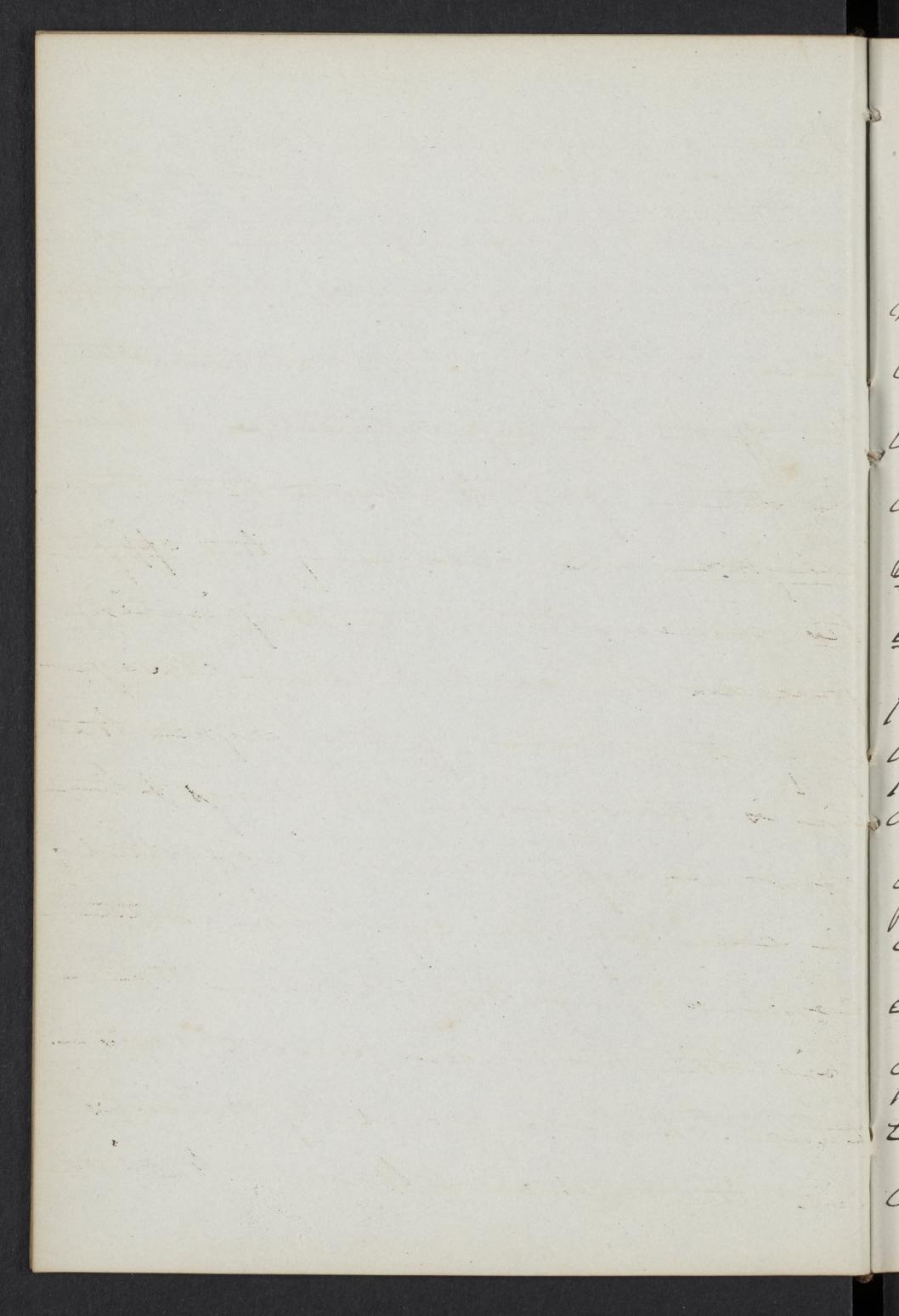
assents to such an understanding of the subject when he thus expresses himself. "the contraction of the stomach during vomiting appears to me to be an ineluctable fact, for it can be felt by the person about to vomit, although it has not so great a share in the production of vomiting as has been ascribed to it" and "that an important circumstance, which has been hitherto much disregarded, is the existence of a kind of imperceptible contraction of the whole stomach, by which its volume is diminished, without individual parts being seen to contract." The next organs interested in the act of vomiting are those connected with the Respiratory Apparatus.



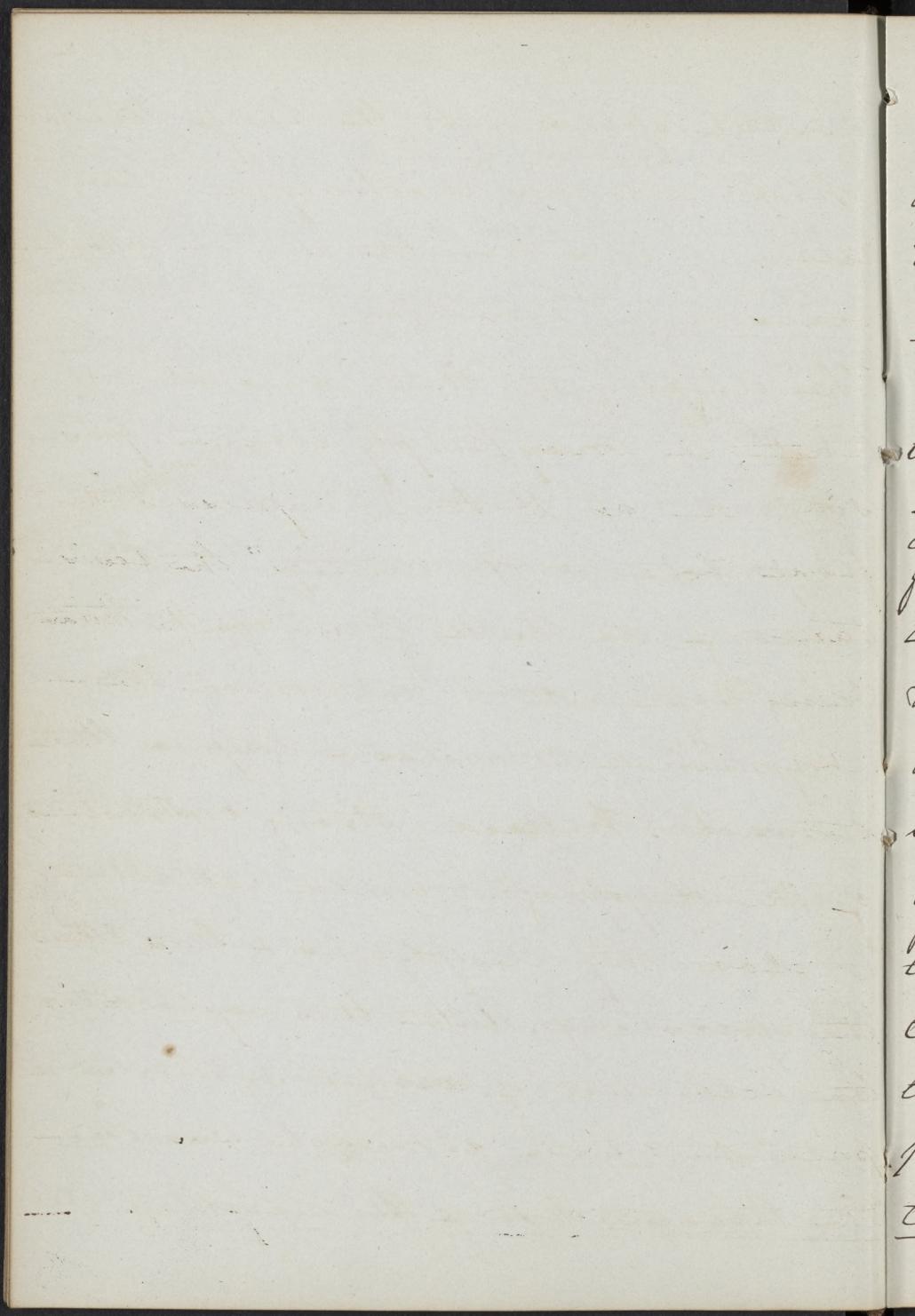
According to Mayaudie's view, -
the stomach being a passive a-
gent, vomiting is produced by -
the compression of the diaphragm
and abdominal muscles. An -
incompatibility of action is here -
involved however, as ordinarily -
the diaphragm & the abdominal
muscles do not work together, -
but on the contrary rather antago-
nise each other. Thus when an
inspiration is taken, the dia-
phragm contracts to enlarge the
thoracic cavity & to thrust the
abdominal organs at the same -
time off the lungs, to accomphish -
which the abdominal muscles -



must yield by relaxation. On the contrary, during inspiration the abdominal muscles exert themselves & the diaphragm in a relaxed condition retires within the cavity of the thorax upon the collapsing lungs. This is a forced inspiration is most apparent. Vomiting is therefore not simultaneous with inspiration, which idea is inseparable from the doctrine that the contraction of the diaphragm is necessary for the compression of the stomach. In thus regarding it Magendie and his followers have committed an error.

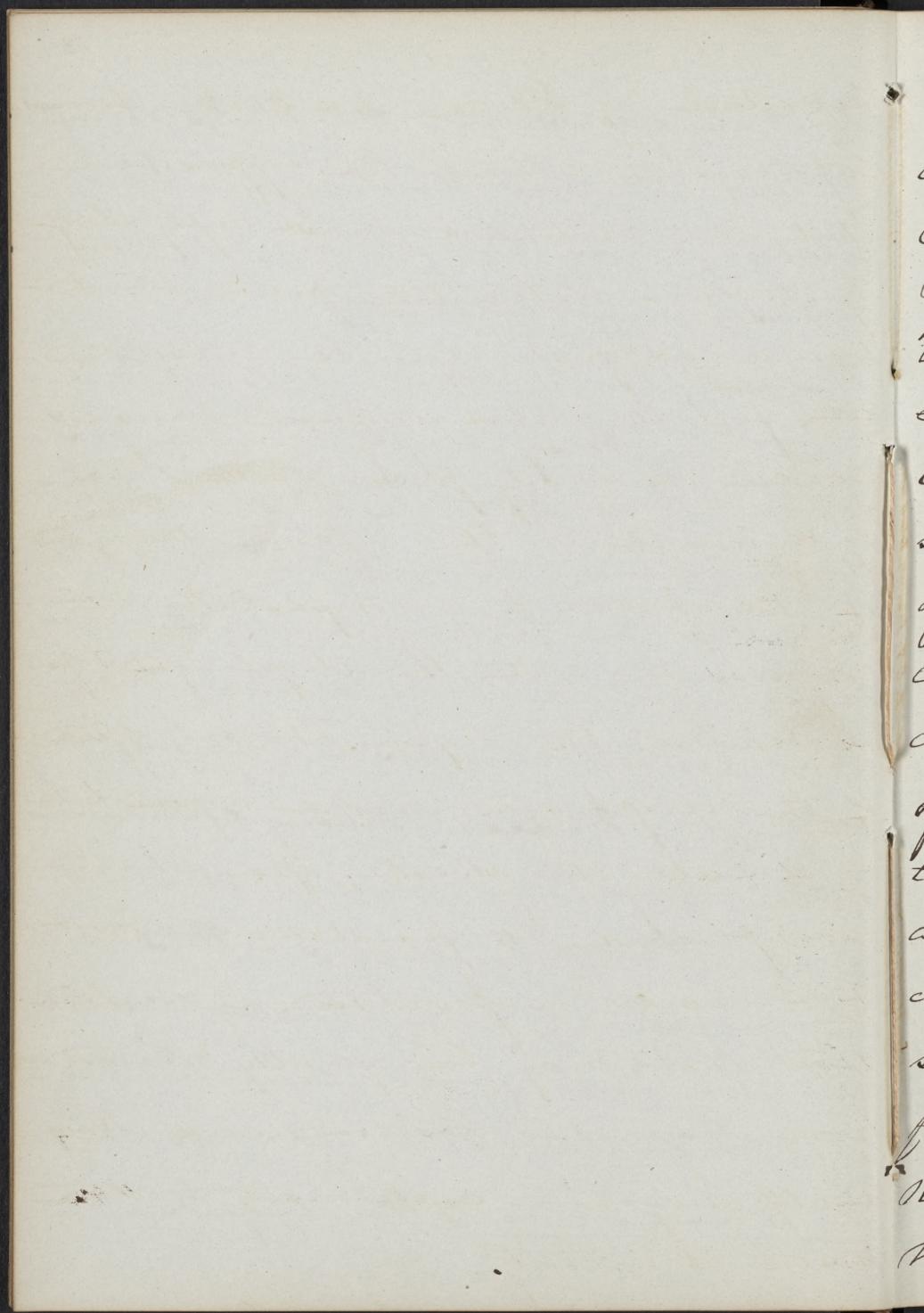


The researches of Dr Marshall Hall appear to have presented the explanation most consonant to truth. He views vomiting as connected with the effort at expiration, and first insisted upon the fact that the Larynx was closed by the epiglottis during the act. Inspiration precedes the exertion, and consequent by of the closure of the larynx the air is retained in the lungs, & the effort at expiration is ineffectual; it can only be expelled at the conclusion of the act, when the epiglottis no longer presents resistance. This was proved by incisions into the trachea & through the inter-

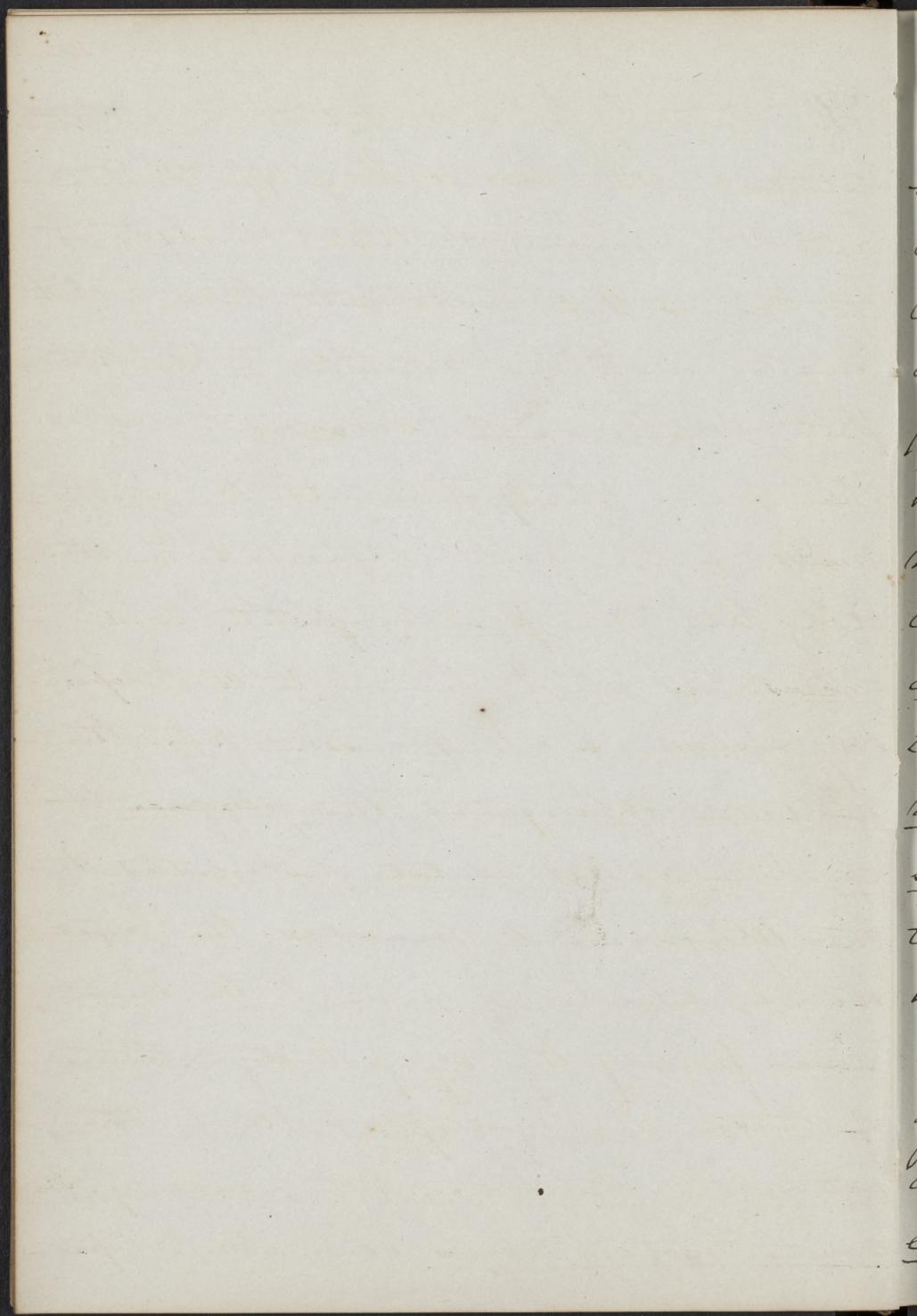


costal spaces into the lungs, through which air was discharged when retching was brought on, but without occasioning vomiting.

The diaphragm then does not contract, it may simply remain passive or as Dr Hale expresses it "float between the cavities" the resistance of the bulk of air in the thorax being sufficient to antagonise the abdominal muscles & compress the stomach. Indeed strong contractions of the diaphragm would rather tend to close the oesophagus & thus retard the operation. With this explanation the occurrence of vomiting in a patient whose stomach was on the thoracic side of the diaphragm —



reported by Dr Graves & Stokes, becomes intelligible without the supposition that the stomach must empty itself by its own contractile power, which would at first view be accounted for the abdominal muscles could as easily press upon it, or so draw down the inferior margin of the chest to accomplish the same compression with the diaphragm before as behind the organ. The only office of the diaphragm would appear to be to dilate the chest; after which accomplished, its function ceases & it becomes inoperative; a conclusion that may be equally derived from Majendie's positive and Magent's negative experiments to determine its activity.



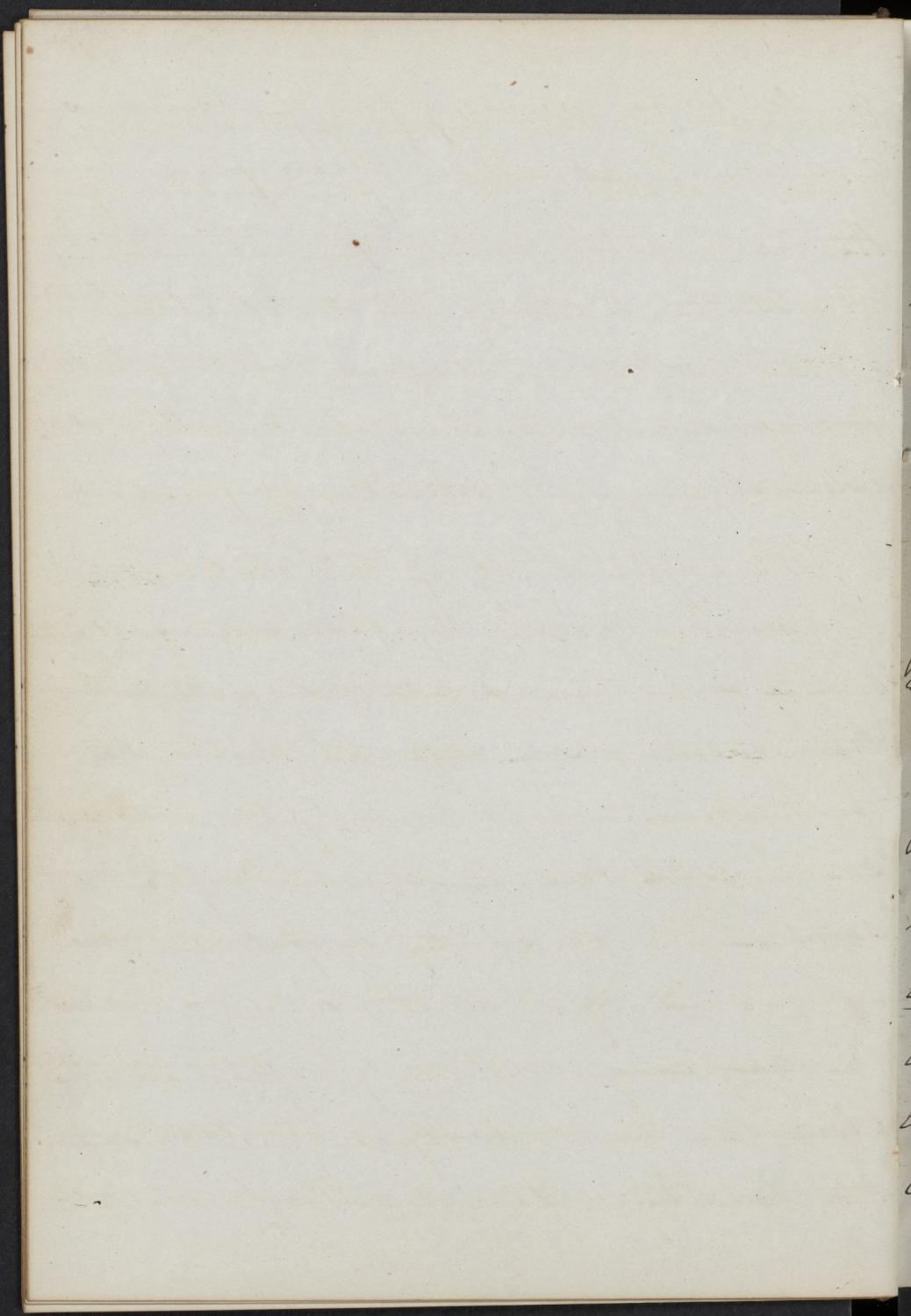
The last organs mentioned as interested in the operation of an emotion - are the nervous central masscs & the nerves that issue from them, by which an harmonious exertion of all the parts concerned, is secured.

The nerves which regulate the movements of the parts interested in vomiting are the pneumogastric and accessories which belong to the respiratory system & which issue from the Medulla oblongata; the phrenic & spinal excitatory nerves distributed to the Abdominal muscles; the lifacial branch which is given to the throat, and finally the sympathetic. Some of these are indispensable to the act, while others are but accessory. The excitatory nerves seem more exer-

These are the respiratory nerves, the
trifacial & spinal nerves as has been
mentioned

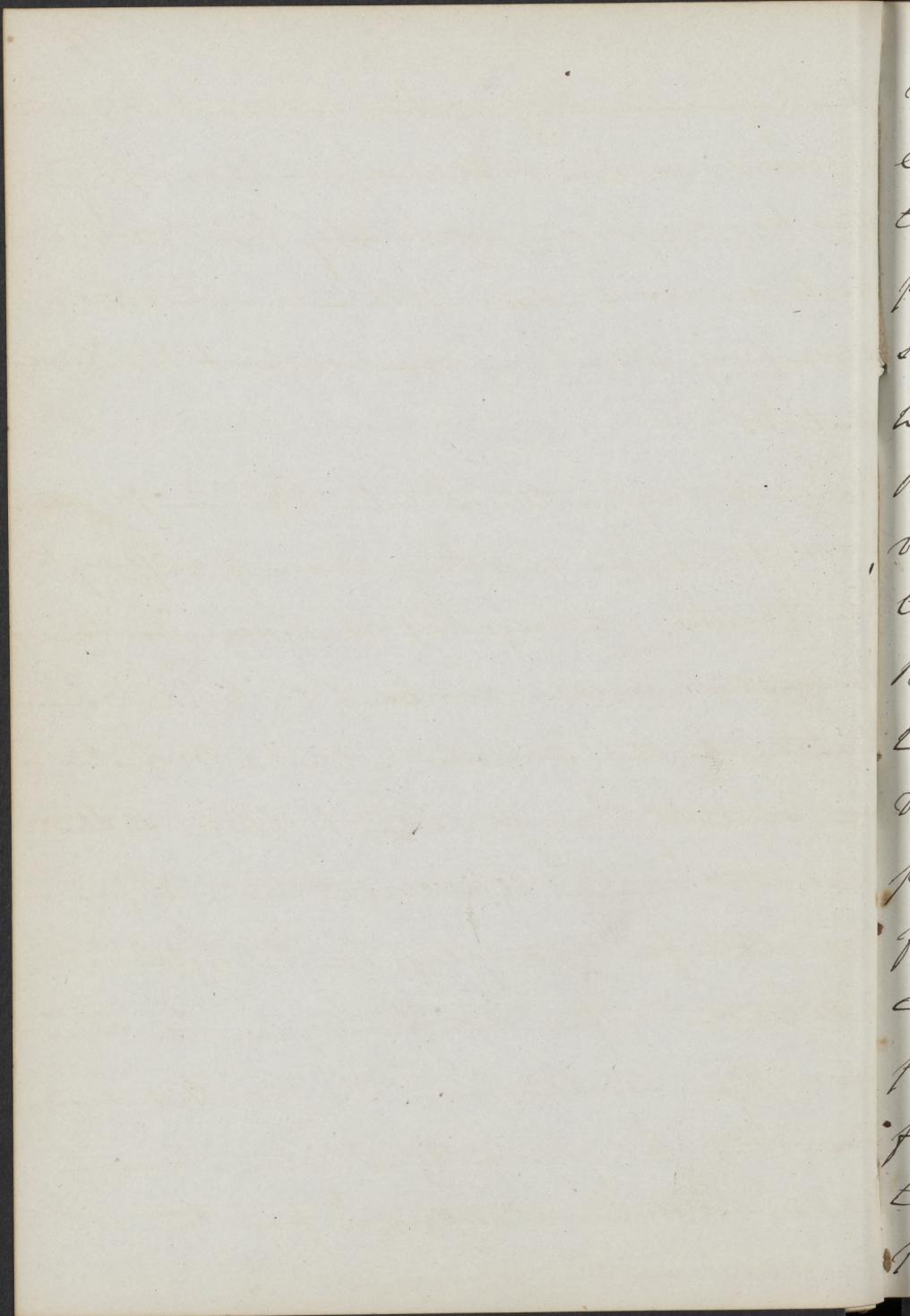
cially to be necessary, for if nervous-
communication be interrupted in
them, vomiting is impracticable. By
the cervical motory nerves is understood
all those controlling the muscular
movements occurring during the act.
The share of influence appropriated
to the sympathetic is obscure.

Nervous communication is essential
to the operation, & physiologists now
regard it as of reflex character.
The impression is made upon the
stomach & through the par vagus &
as Müller thinks the sympathetic is
communicated to the brain and
spinal cord, whence by reflected ac-
tion the parts involved are roused
into action. This has been deter-



Mixed by the effect of dividing, —
and irritating the upper portion of
the par vagum, which occasioned
vomiting, & also of what Shattoe —
states as the analogous result of cutting
the splanchnic branch uniting the
caecum ganglion with the spine.

Independently of the destruction
of nervous power by division of the
nerves & a consequent obstruction to
the action of emetics, the participation
of the brain is proved by numerous
circumstances. Thus, from the suspen-
sion of the sensibility of the sensoreum
commissum by narcotics, or as occurs
in apoplexy emetics will not operate,
while on the contrary disturbance of
the healthy actions of the brain will



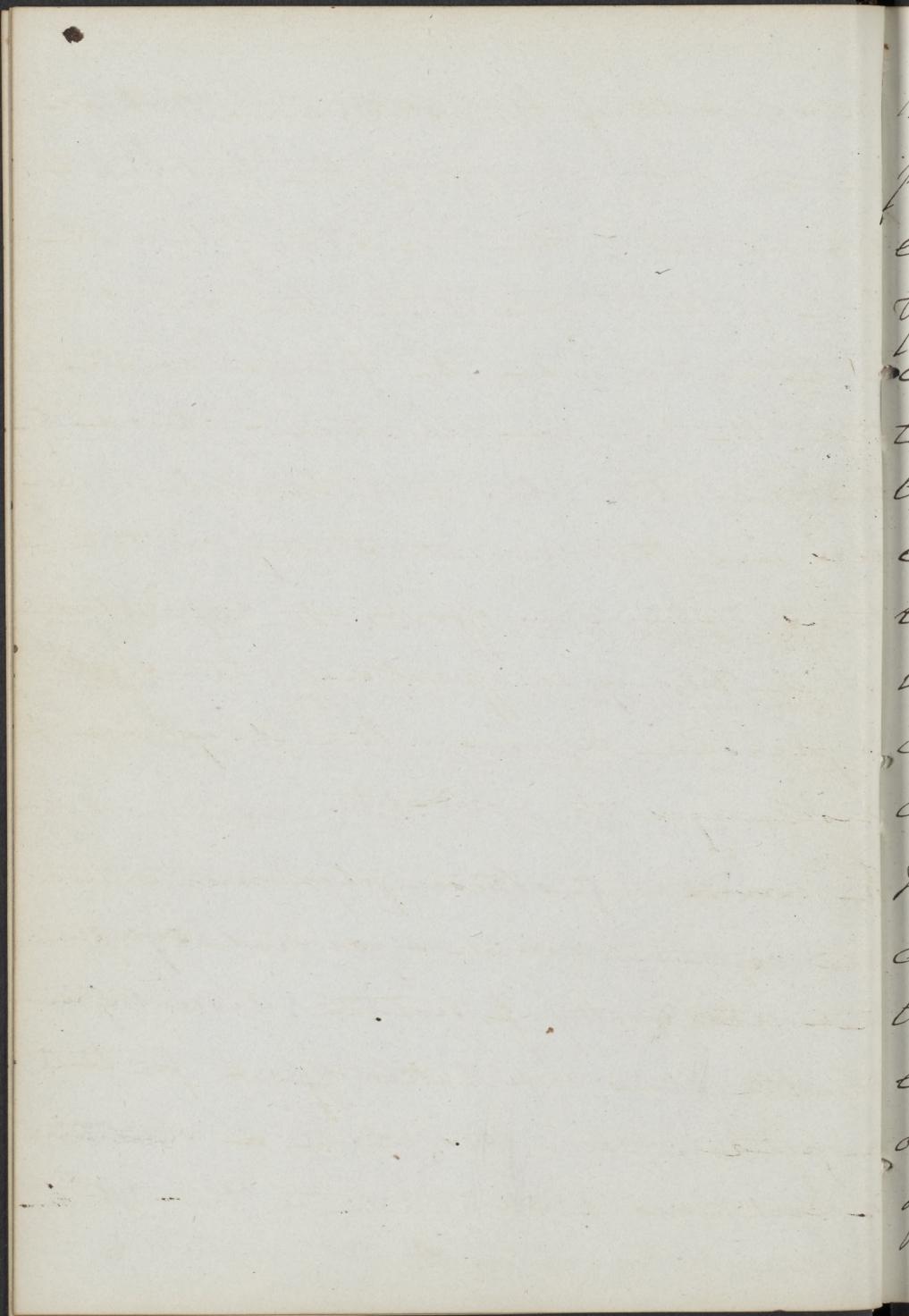
be reflected upon the stomach & cause emesis, as for instance a blow upon the head, more especially the hinder portion as occurs often in children - swinging & sailing on rough & troubled waters.

Remote sympathies will likewise produce vomiting, as in the case of injury to the testes, strangulated hernia &c. But the most curious is from irritation of the fauces, which must be strictly confined to them & the palate, for if the irritating body (a feather for example) be brought in contact with the pharynx, it will provoke swallowing. The feather used for this purpose has often been taken into the aoesophagus from the impression on the pharynx.

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The individuals in whom such idiosyncrasies are exhibited are for the most part of excessively impressionable constitution. They afford proof however of the close nervous communication & sympathetic relations between the organs.

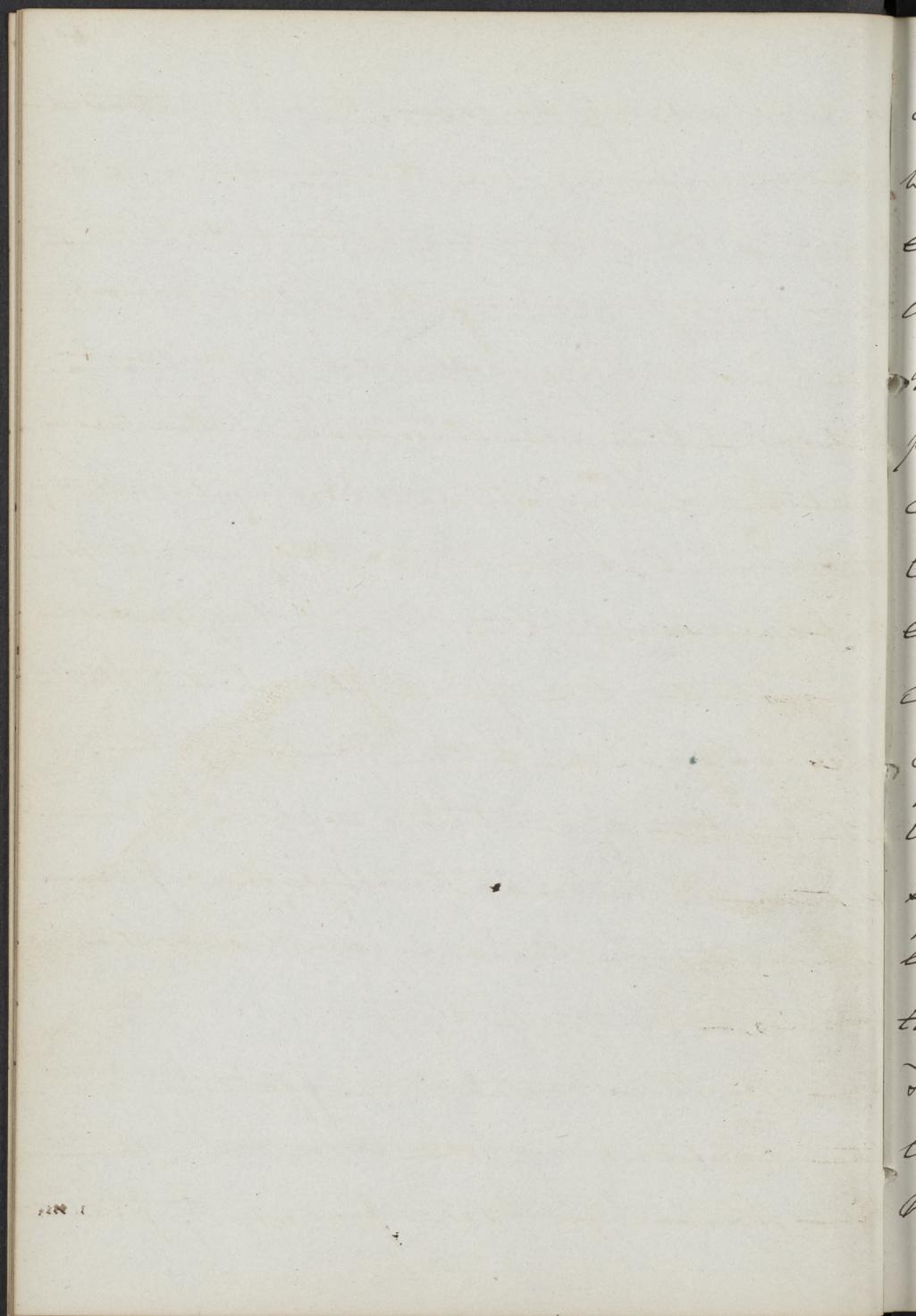
Fainting from loss of blood & sometimes opium will occasion vomiting. Besides these causes of it, there may be an origin as purely nervous in character, as in cases where it is produced by mental impressions or upon the organs of sense. Such are the recollection for sight - taste or smell of disagreeable objects.

Having now discussed the difficult questions concerned in the act of vomiting, let us distinctly state the several steps of the operation & by this recapitulation bring them into a condensed summary. - An impression is made upon the stomach - which is communicated to the brain and spinal column & reflected back upon that organ & the respiratory apparatus. A contractile-



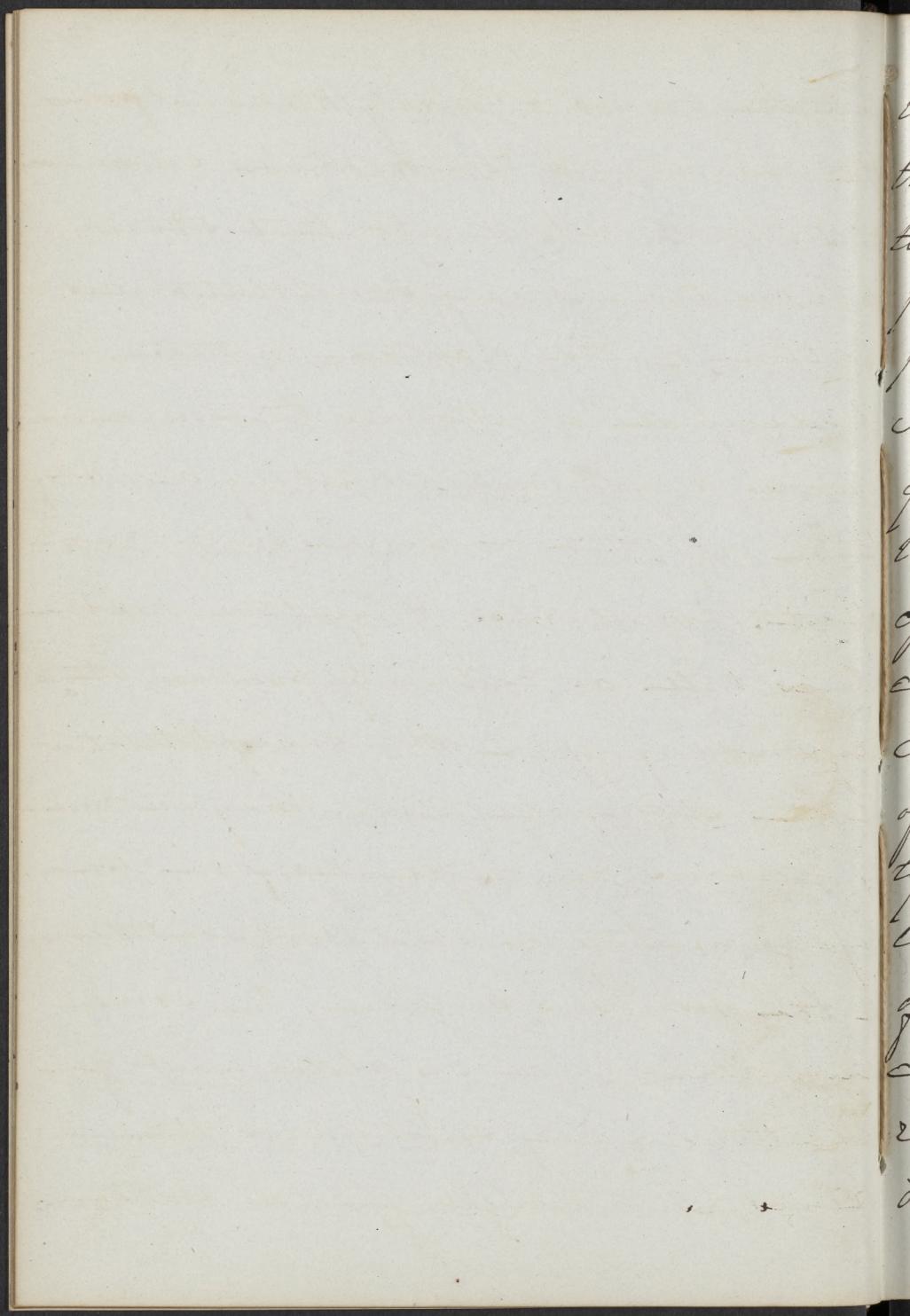
Movement of the stomach takes place, with closure of the pylorus & expansion of the cardia, followed by a full inspiration; the palatoglossal arch is raised, the fauces constricted, the larynx elevated & closed by the epiglottis. The abdominal muscles are thrown into strong contractions, with an effort at expiration which being ineffectual, the stomach is pressed against the diaphragm & discharges its contents.

In union with these phenomena, there are certain local & general symptoms that are worthy of notice. Usually an eructation does not take effect for ten or fifteen minutes, when a sensation of sickness of stomach is felt, which



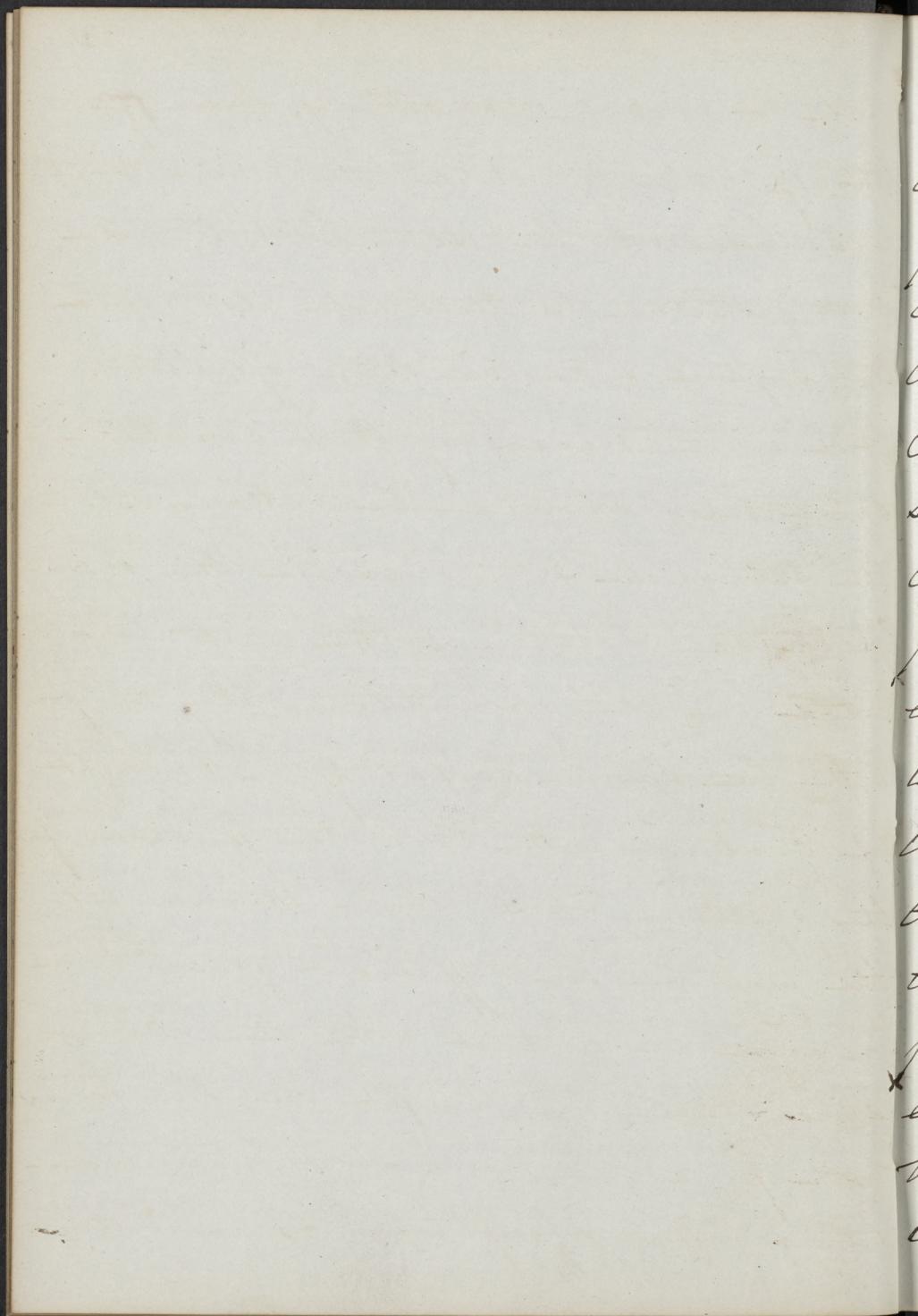
is termed nausea. this is attended with swimming in the head, a quivering of the lip, - a flow of saliva, - and a depression of the vital powers, manifested by feebleness of pulse & palor of the countenance, with evaporation of moisture. During vomiting the circulation is perturbed and embarrassed, the head becomes congested, the face flushed, the eyes suffused & the pulse full. - When the operation is over, the system becomes tranquil & from exhaustion there is a disposition to sleep. -

The matters that are ejected are the contents of the stomach, the bile that has been forced by pressure



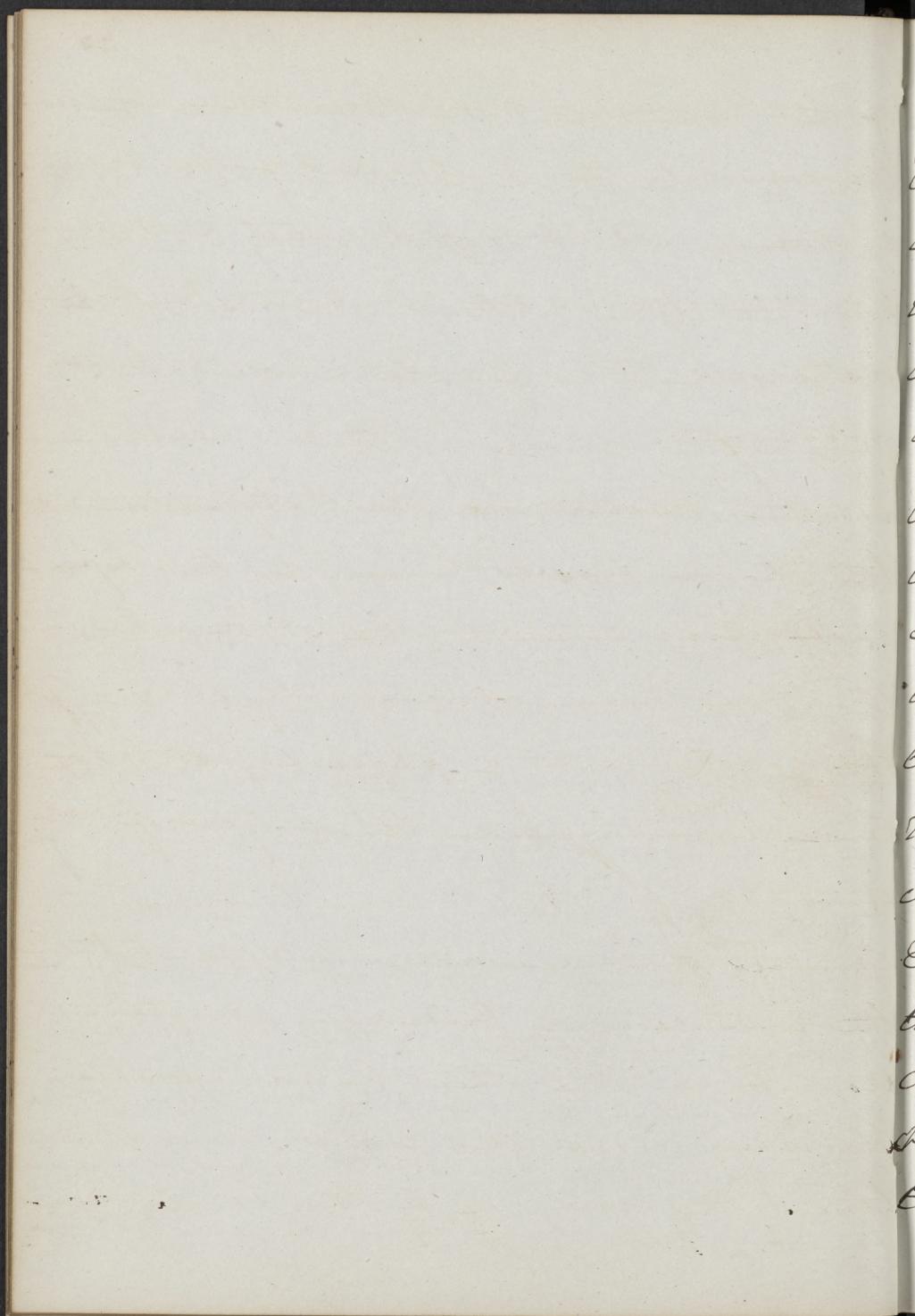
into the viscera & lastly mucus from
the bronchi & trachea. In some cases
to I have not doubt that the
pancreatic juice constitutes a
portion of the ejected matter.

Medicinal substances that are
given to produce vomiting are not
those only that occasion such an
effect. Sometimes purgative medi-
cines will as certainly produce it,
depending upon the susceptibilities
of the stomach, which may be pure-
ly nervous, or originating in an
inflammatory or irritable condition
of the mucous surface. In some
cases there is a complete want of
retention of all substances, even
drinks, as a draught of cold water -



will occasion vomiting. Bile of itself will produce it when regurgitated into the stomach. Crude indigestible matters will also rouse the organ & cause their ejection.

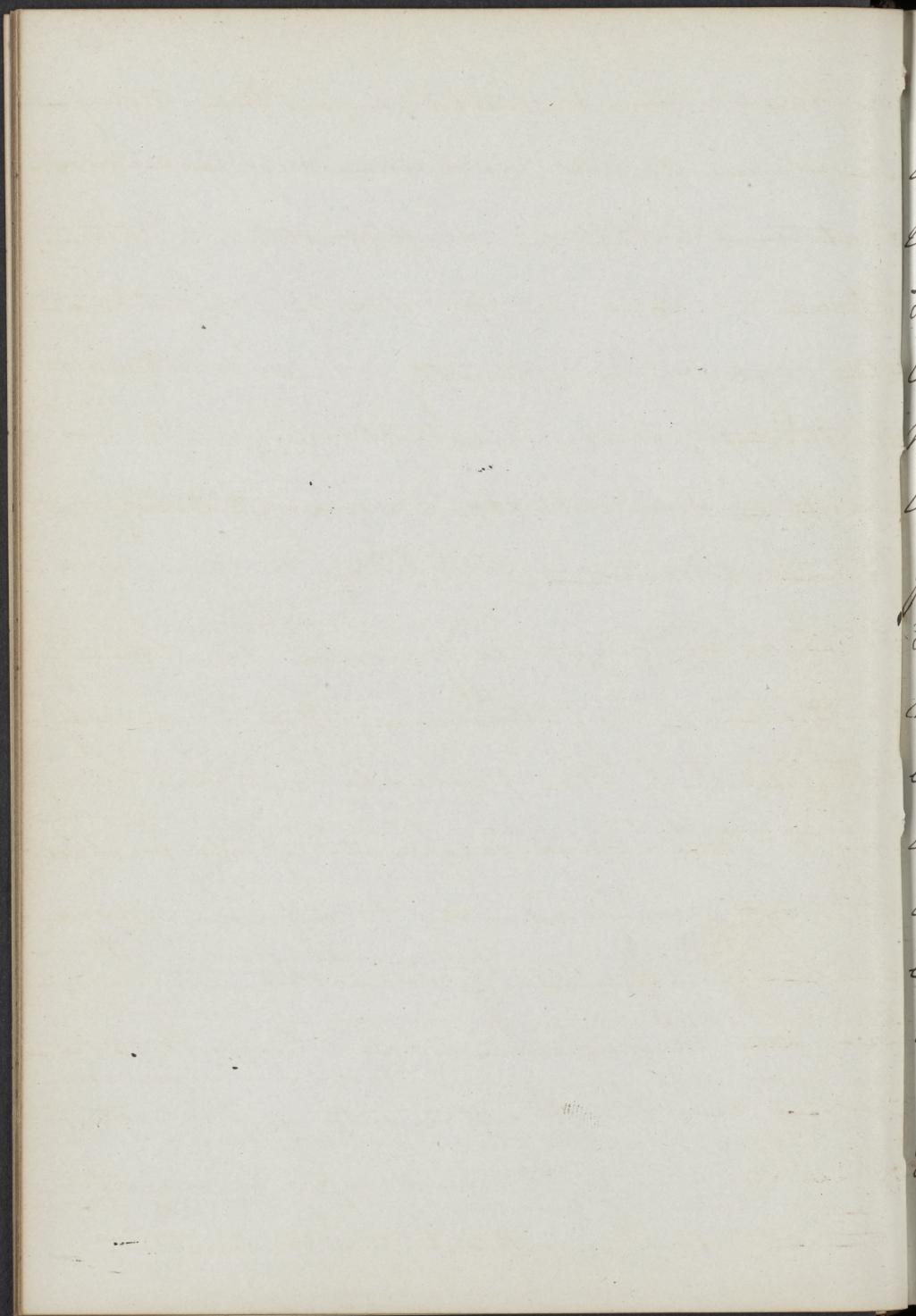
Now is it necessary that emetic substances should be taken into the stomach & thus excite the sympathetic action of the parts interested in the operation. They may with the same certainty be brought in contact with remote portions of the system. Thus when thrown into the rectum in sufficient quantity or placed in contact with the skin, — emesis will be brought on. This occurs both from the nervous communication & from absorption. As an instance



of the first we may mention tobacco thrown into the rectum & of the second tartar emetic moderately rubbed into the skin as a revulsive. In these instances the reflex action is most apparent.

Emetics substances when injected into the blood vessels, have also an especial direction to the stomach, — this has been abundantly shown by the experiments of physiologists who have investigated the subject of vomiting.

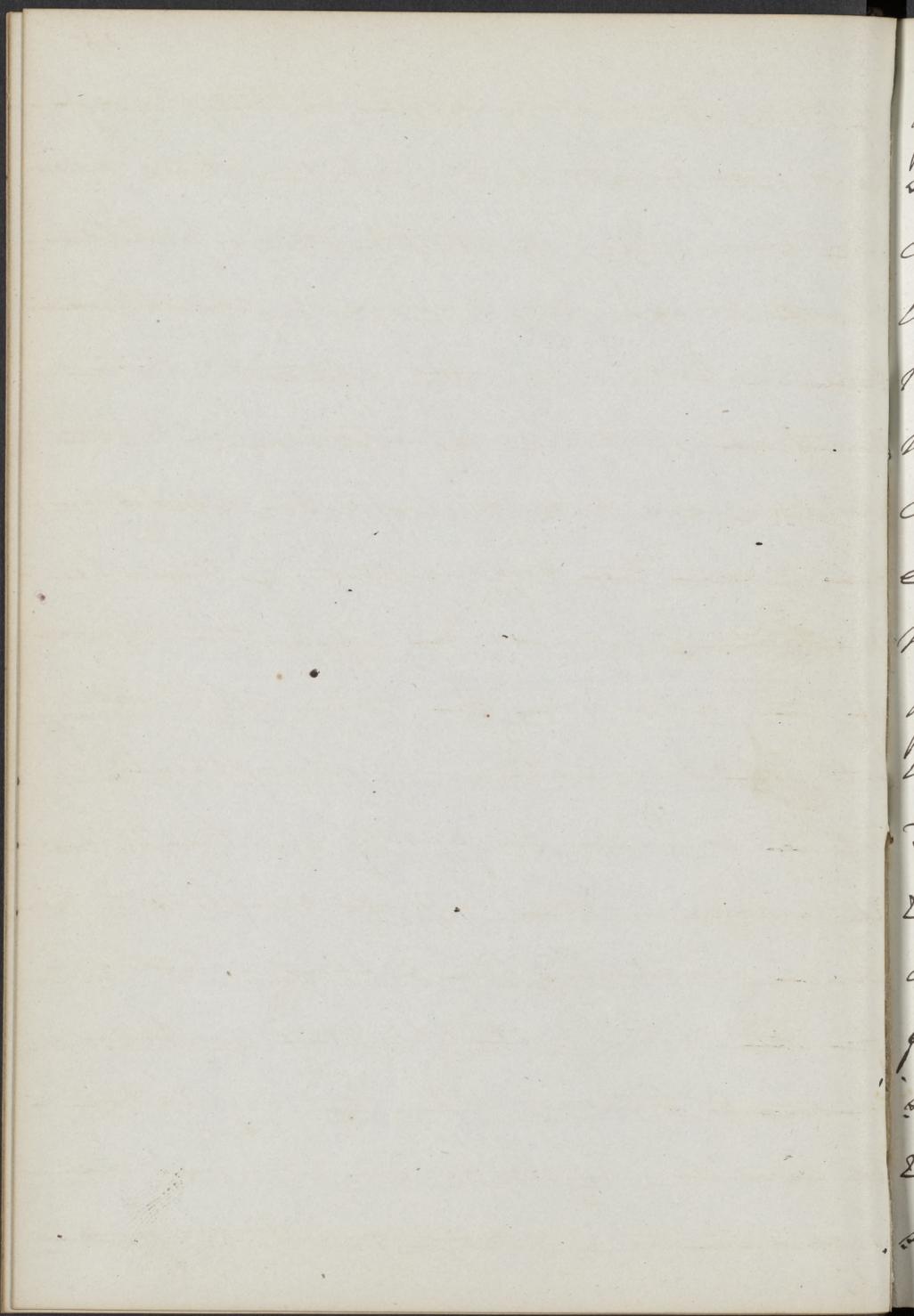
Emetics that are administered with the intention of producing vomiting — do not on the other hand invariably bring about this result. Thus sometimes they run off by the towels from



a purgative operation, or they may -
in some cases induce violent pro-
stration, with a diaphoretic action.

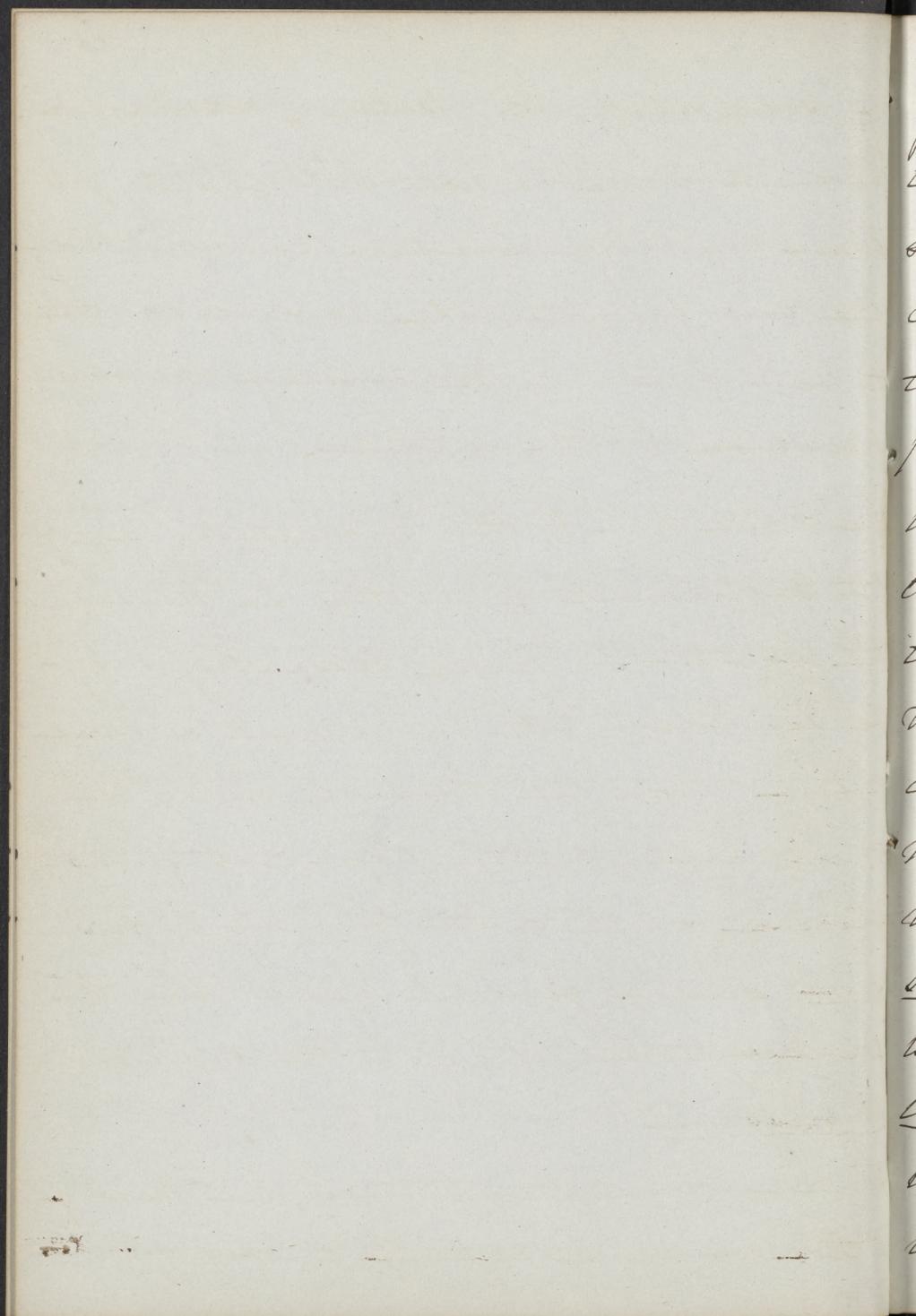
These irregular modes of affecting -
the organs is mostly due to the -
method of administration, or to a -
want of sympathetic susceptibility -
from disease.

There is a great difference in the -
manner of influencing the economy -
exhibited by the several articles belong-
ing to this class, originating in peculiari-
ties so decided as to afford consid-
erable latitude of selection to carry
out the indications for which they are
given in the treatment of disease. -
Thus some of them simply evacuate -
the stomach, without the production -



of nausea to any great extent, or subsequent prostration, while others again are powerfully perturbative, forcible in their operations, causing cascivous nausea & leaving the system in a marked state of depression. These differences may perhaps be explained upon the supposition of their immediate impression upon the nerves of the stomach, or their introduction into the circulation by absorption.

There is also disparity in the time required by the several emetics to produce vomiting. The saline emetics for the most part operate in the shortest time, while the vegetable requires a longer period; this has been supposed to depend upon the difference



of solubility. This kind of emollient however is not satisfactory, as some vegetable emetics, as mustard, are very prompt. The reason is rather to be sought in the mode of operation peculiar to the article.

We come now to the indications for the employment of emetics as therapeutic agents. — To fulfil these they may be regarded with reference to a local action upon the stomach, and a mechanical action upon contiguous viscera which is the primary impression and a general effect upon the whole system which is the secondary impression.

Under some circumstances, the first of these is alone required to carry out the

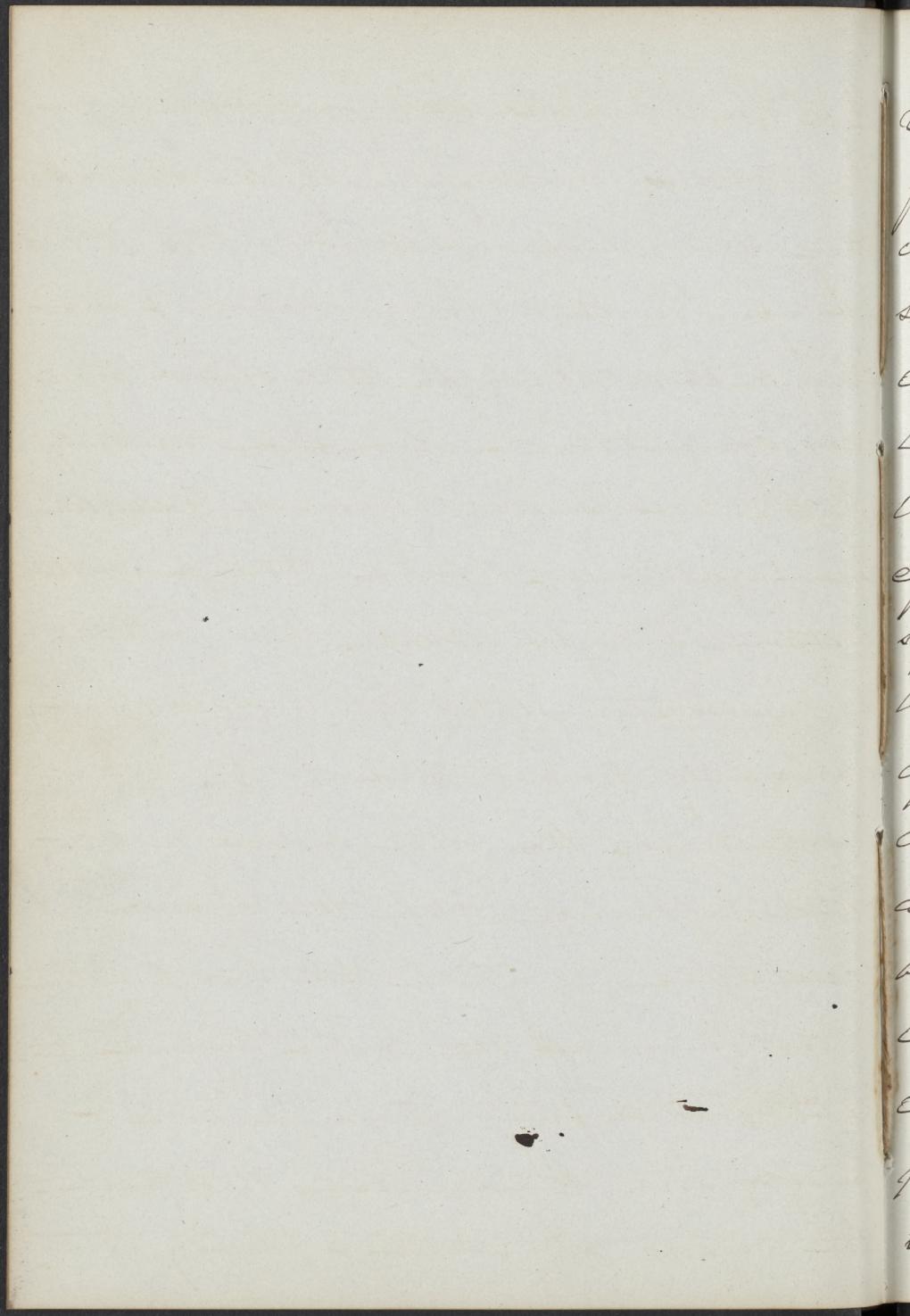
Requisite indication. In others the second is most important, but in the majority of diseases, both are essential, and both perform important service in conducing to a restoration to health. Connected with the indications for which they are given, will be discussed the efficacy of emetics in the treatment of particular diseases. Before we enter upon their particular application however, let us understand more fully the effects connected with their primary and secondary action.

The first effects are inseparable from the mechanical act of vomiting & may be stated to be the evacuation

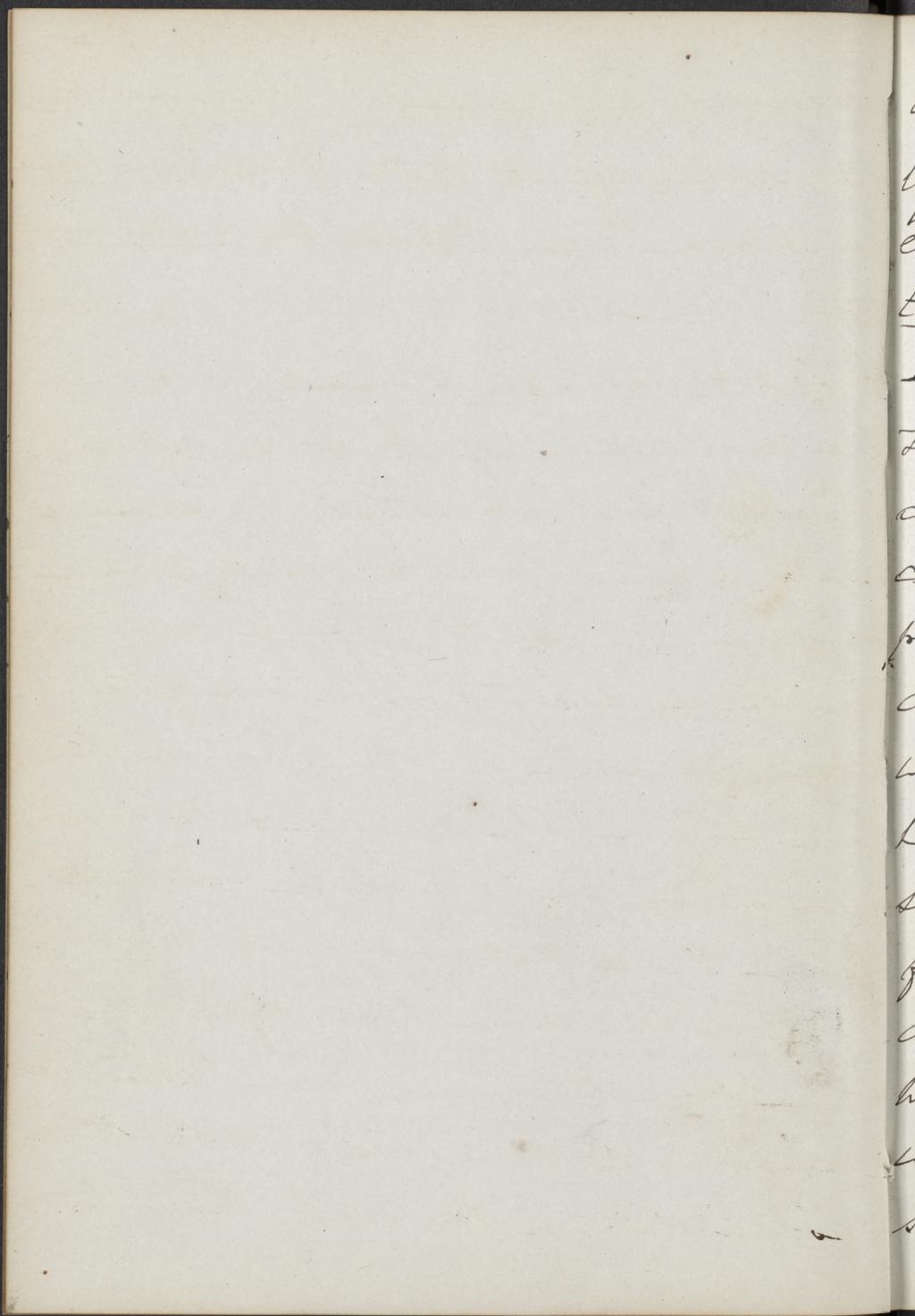
The matter vomited are the ingesta-
that have been taken into the stomach,
the secretions from the mucous surface-
in some cases gastric fluid, and to-
wards the termination of the retching-
be prolonged. Colle of a yellowish or
greenish colour. The evacuation from
the lungs is of mucus.

of the stomach, the unloading of contiguous viscera, as the liver with its gall bladder, the pancreas, the impulse given to the portal circulation & the expulsion of matters that may exist in the lungs & pulmonary apparatus & in the organs of deposition, all of which are effected by the pressure & concussion.

The secondary effects are partly owing to the mechanical impression; and partly to the peculiar powers of the substance that may be employed & from this arises the differences that are exhibited. Thus by the removal of the matters thrown off from the secreting organs enumerated, free secretion is permitted, & the mucous surfaces are



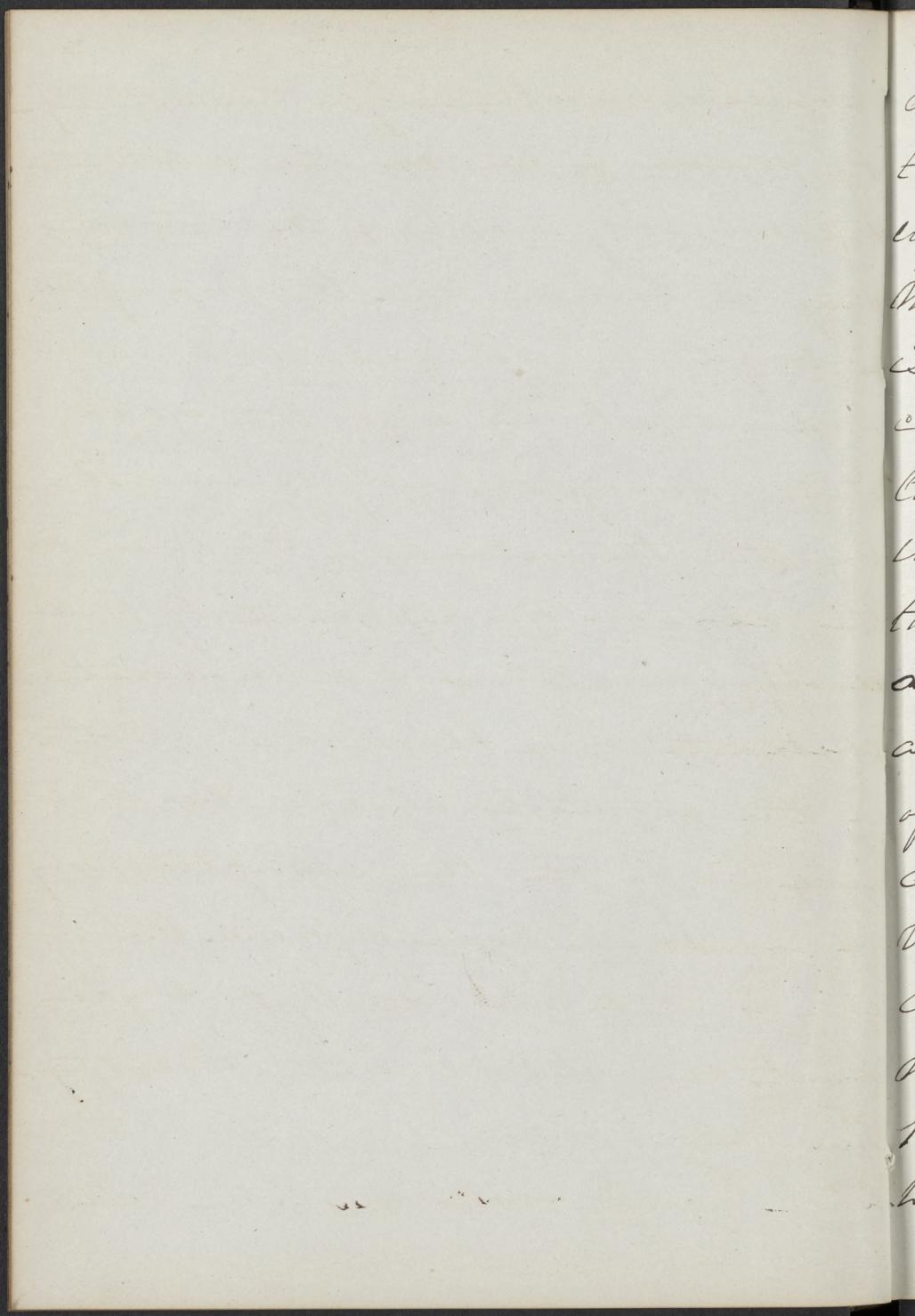
left unembarrassed to perform their functions. More especially the stomach itself, in which a new action is set up. By the invigoration of the circulation through the organs, capillary congestion & impeded activity in the vessels are removed, and an equalization of blood throughout the system brought about. But further, - in connection with the nervous, and apparently proportioned to it, is a depression of the vital powers, a sedative influence upon the economy - occasioned, by which the heart's action is diminished, the pulse lowered, the cutaneous surface rendered cool & perspirable, the secretions throughout the organs promoted, & finally the



assortments quickened in their operation,
upon the effects that have now been
exhibited are based the indica-
tions which are. -

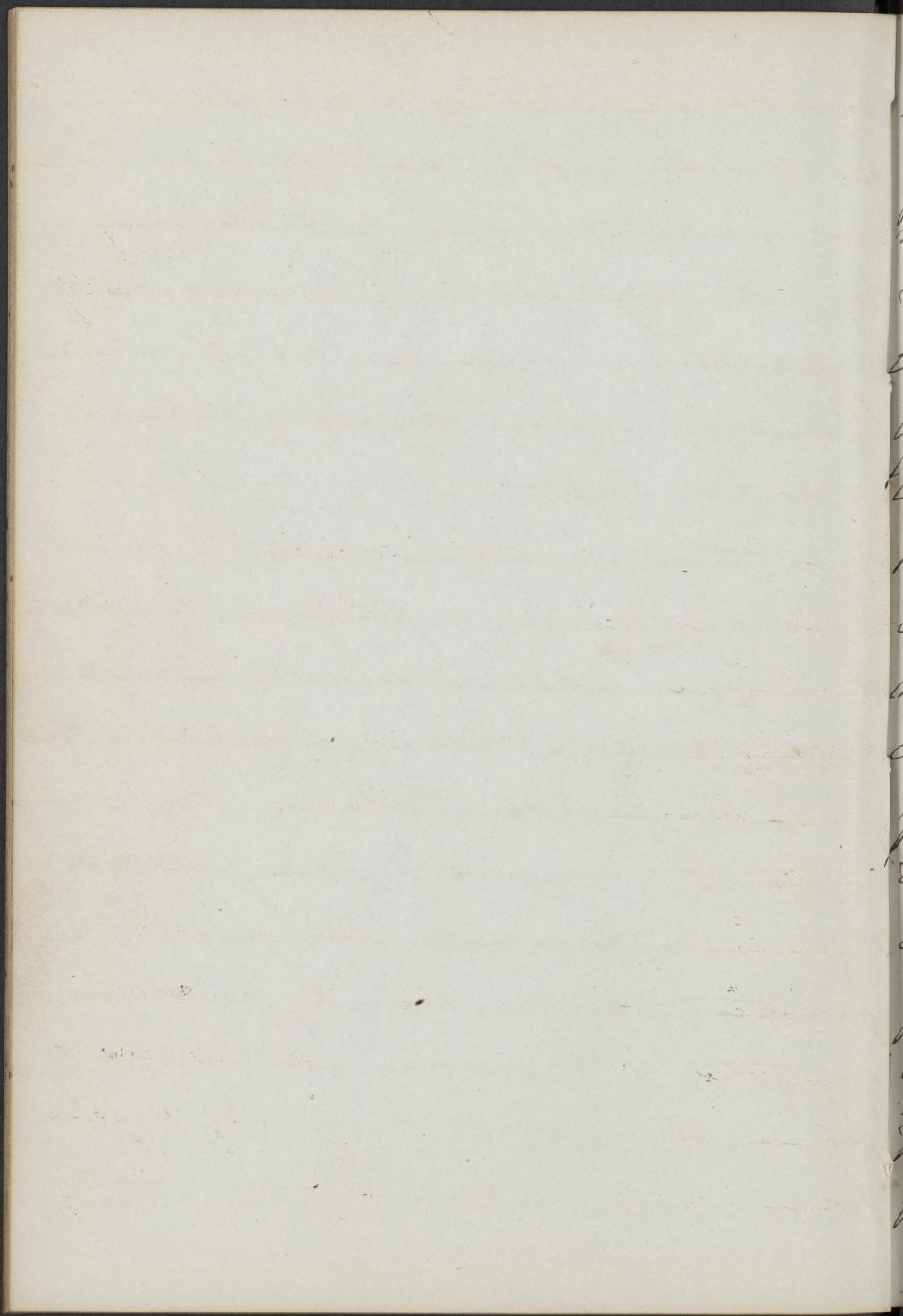
I. To evacuate the stomach.

The evacuation of the stomach be-
comes highly important in some-
cases, & even upon its speedy accom-
plishment may the life of an in-
dividual depend. For example -
where Narcotics or other poisons have
been taken. The emetic substance
should in such case be selected -
from those that act most promptly -
and at the same time efficiently. -
Where narcotics have been taken it
is important to recollect that the
susceptibilities of the brain have been



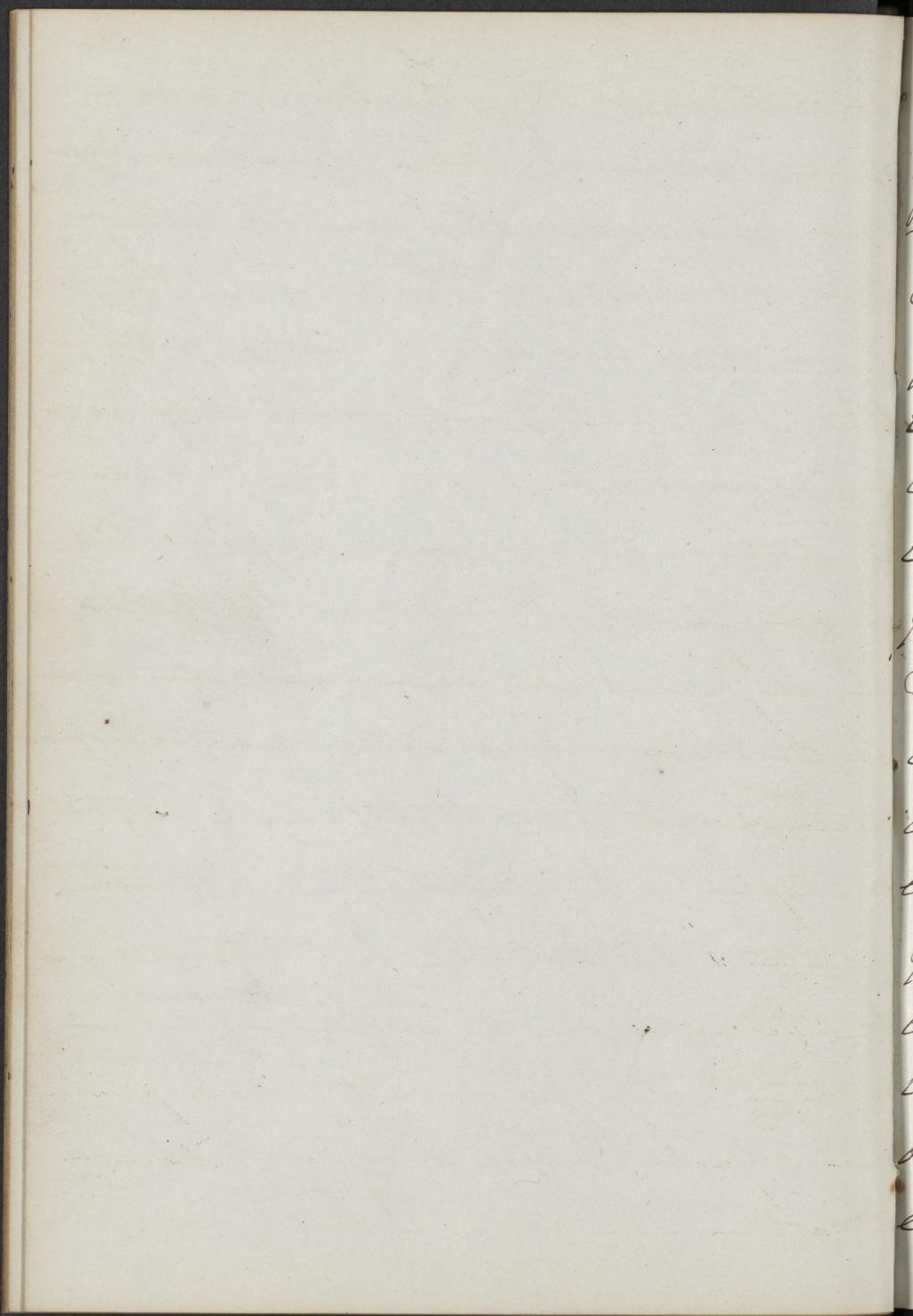
deadened & that by administering too much of the emetic substance, inflammatory lesion of the stomach may be brought on; the proper plan is to give a decided dose, and endeavor to arrest the sympathetic susceptibility by diminishing the turgescence of the brain, & this can be accomplished by cold dashing, reoulatives & a moderate abstraction of blood. Free ablation of the stomach should be avoided as by it the absorption may be rendered more vigorous; the drinks that are usually employed must be withheld until vomiting has taken place.

When acid substances have been



swallowed, although the irritation of the stomach may induce sickness and vomiting, yet it may be but partial and consequently ineffectual, a mild emetic held by inducing free vomiting, will relieve the organ.

But there are other cases in which it is expedient to unload the stomach, as where crude and indigestible substances or articles of food have been taken, which irritate the mucous surface, oppress, and interfere with the digestive function & give rise to general symptoms of malaise restlessness & fever. Children frequently suffer from such a cause & may readily



be relieved by the employment
of a mild emetic. Flatulosity how-
ever are most obvious to such -
circumstances, which arise more-
from over distension than irrita-
tion. The habitual practice of hav-
ing recourse to artificial means -
is detrimental as it impairs the
power of digestion & is therefore to -
be deprecated, but in some cases
it becomes important, when serious
attendants are threatened, as for
example an apoplectic attack.
Gentle solicitation by titillating -
the fauces, or draughts of warm
water will frequently accomplish
our object, but if not, a mild -
emetic will perform the office.

+ of this a most interesting instance
occurred in a gentleman of this -
city, many years ago in Paris.

Total incapability from overdistension may occur & the individual's life become a sacrifice to his appetites. Of this numerous examples are on record; in this case also rupture of the stomach has been met with.

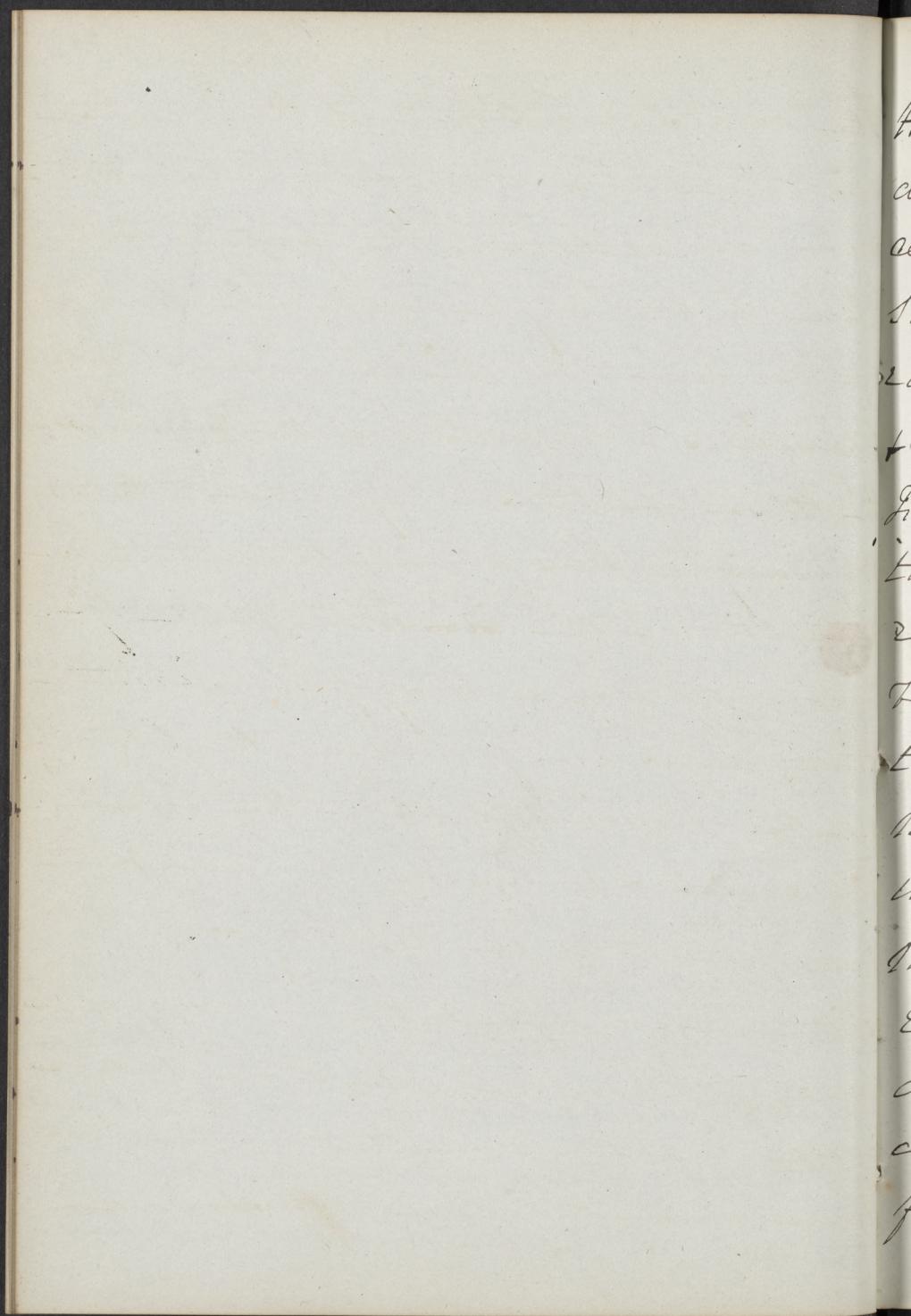
A state similitive of apoplexy occasionally occurs from distention of the organ by crude ~~injesta~~ & where without assistance it could not relieve itself. Even a condition of torpor & obliteration of the functions of life that has been mistaken for death itself, has arisen from a similar cause.

Various cutaneous affections produced by the ingestion of substances

that have irritated the stomach, -
are met with in practice, either -
originating in the peculiarly acrid-
tious or poisonous character of the
substance, or else in idiosyncasy. -
Of such urticaria is an example.

II. To unload contiguous viscera,
and excite the portal circulation.

The viscera that are impressed
by the action of an emetic, are
the liver, the pancreas and spleen,
and certain engorged conditions -
of them may exist which may be
relieved in this way. The benefit
to be derived is from evacuating
the ducts of the liver and the
gall bladder, as well as the duct
of the pancreas, & from quickening
the activity of the circulation in -

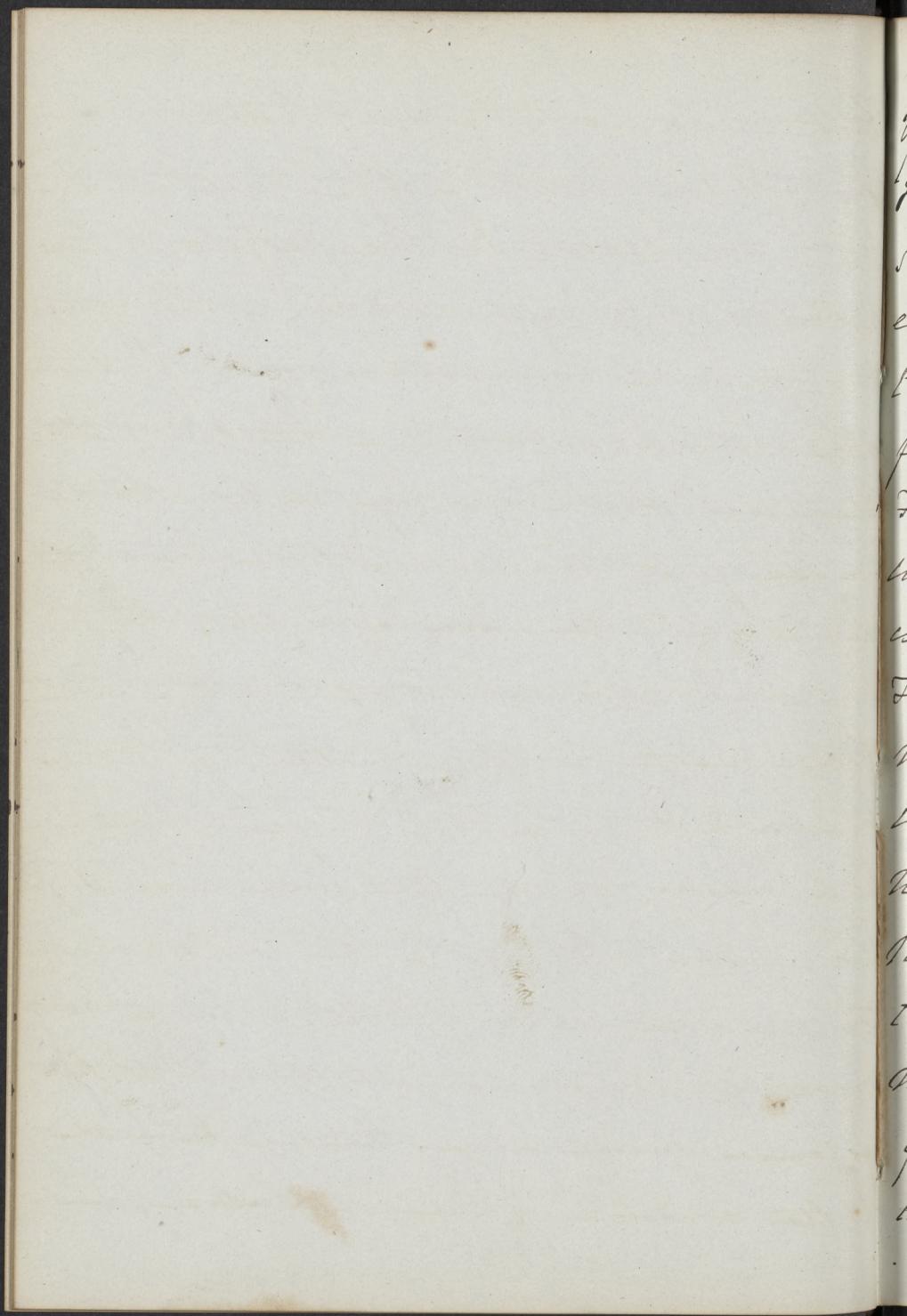


the organs mentioned & the venous-distribution to the abdominal viscera constituting the portal circle.

Such is the explanation of the exudative operations in chronic slentitis, hepatitis & congestion of the pancreas.

In these affections conjoined with torpidity of the circulation, there is retention of the ^{secretions} ~~secretions~~, which by becoming acid may prolong irritation; or as in jaundice the bile may not be eliminated from the secreting vessels & becoming absorbed may manifest itself in the fluids.

Either associated with or independent of jaundice gall stones may become impacted in the hepatic duct, from which they can be dislodged



by the consciousness of an emotion.

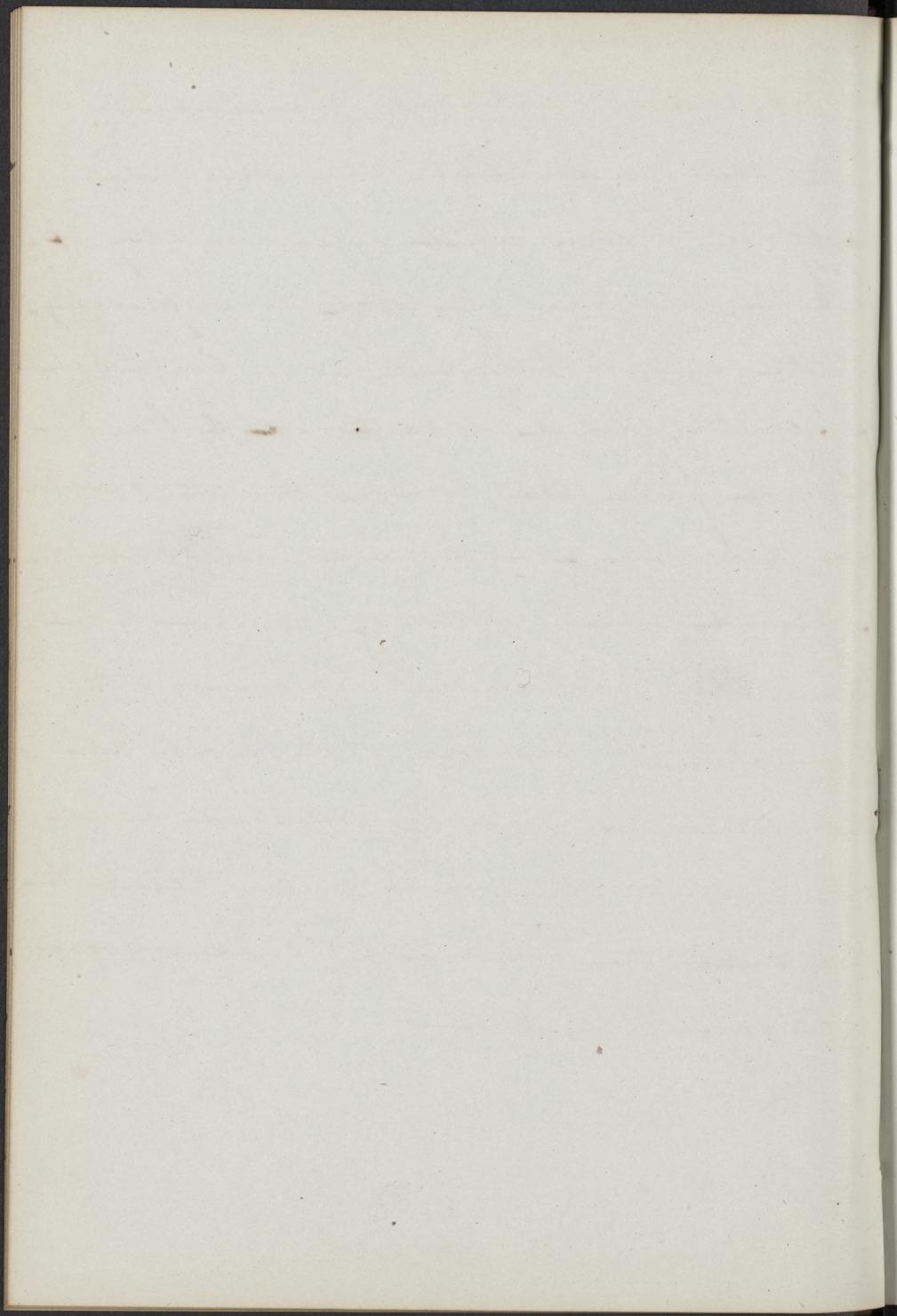
In inflammations of high local action - some hesitation should be felt in exhibiting these articles, as the affection may be aggravated by too powerful a disturbance of the circulation. Free depletion should be practised - in the first instance & then an emetic becomes safe and efficient.

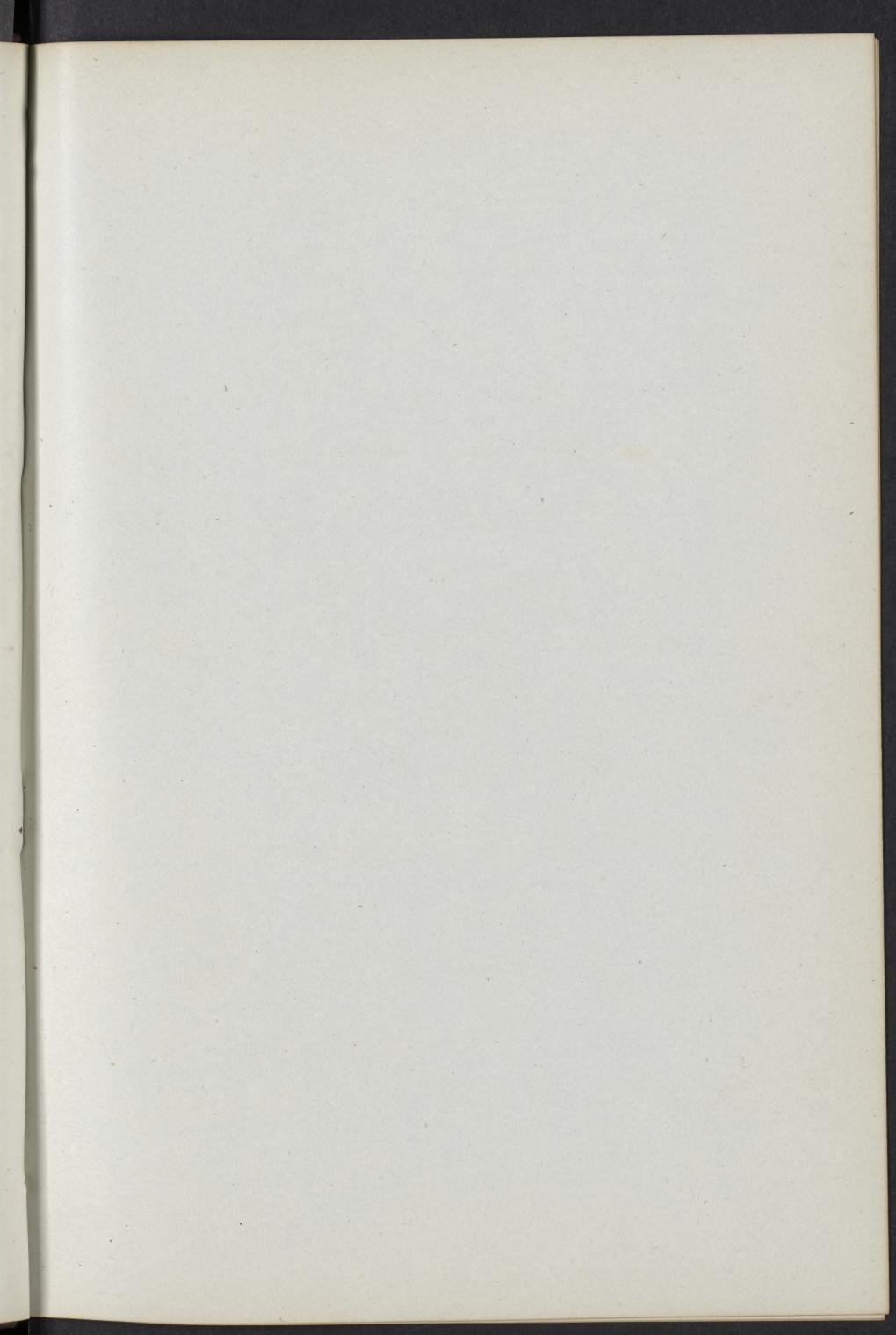
They are best exhibited at the commencement or termination of the inflammation of the large abdominal organs, as in the first case they may cause abortion of the inflammatory action and in the second remove the obstruction that is left. Reference must always however be had to the condition of the circulation.

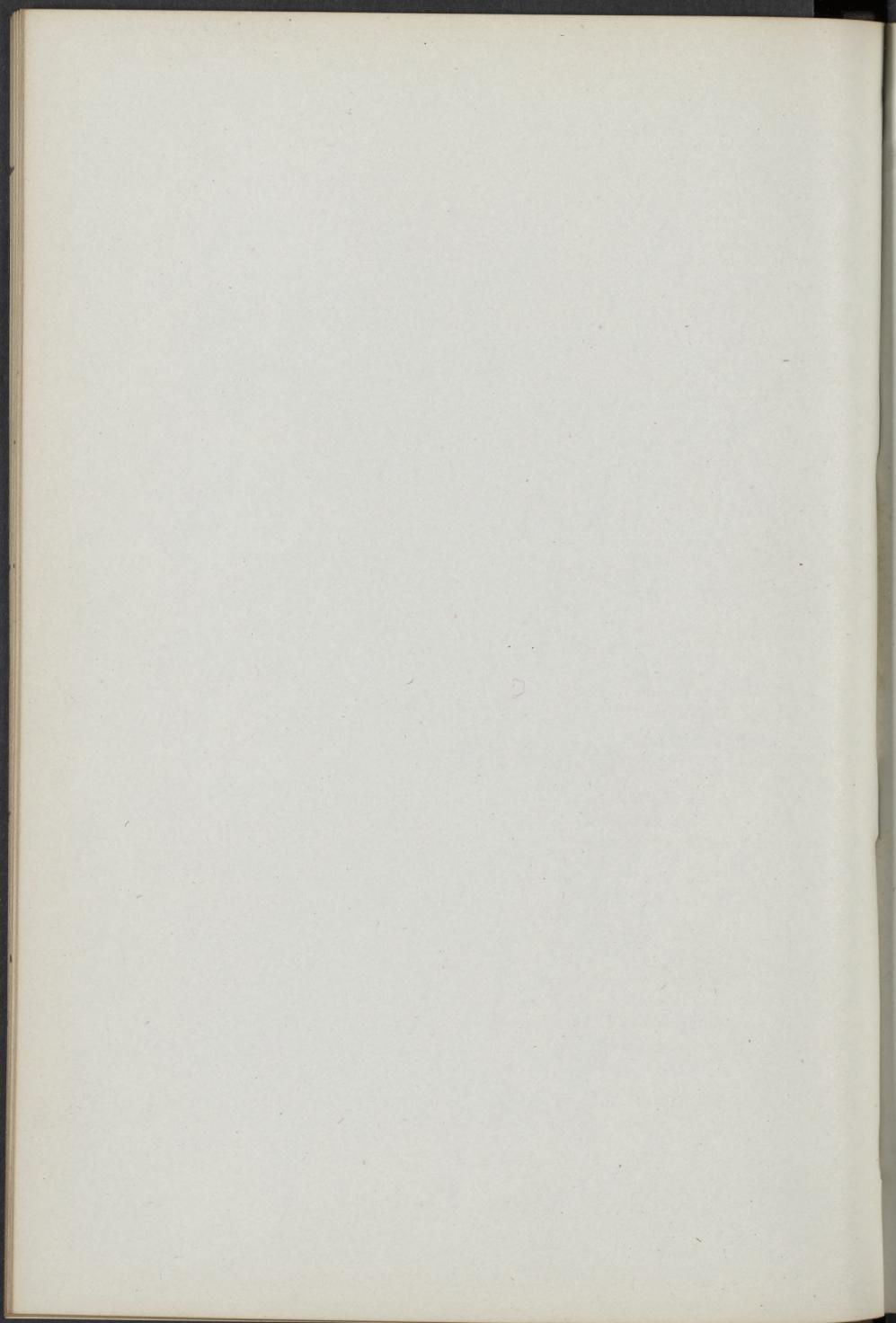
and

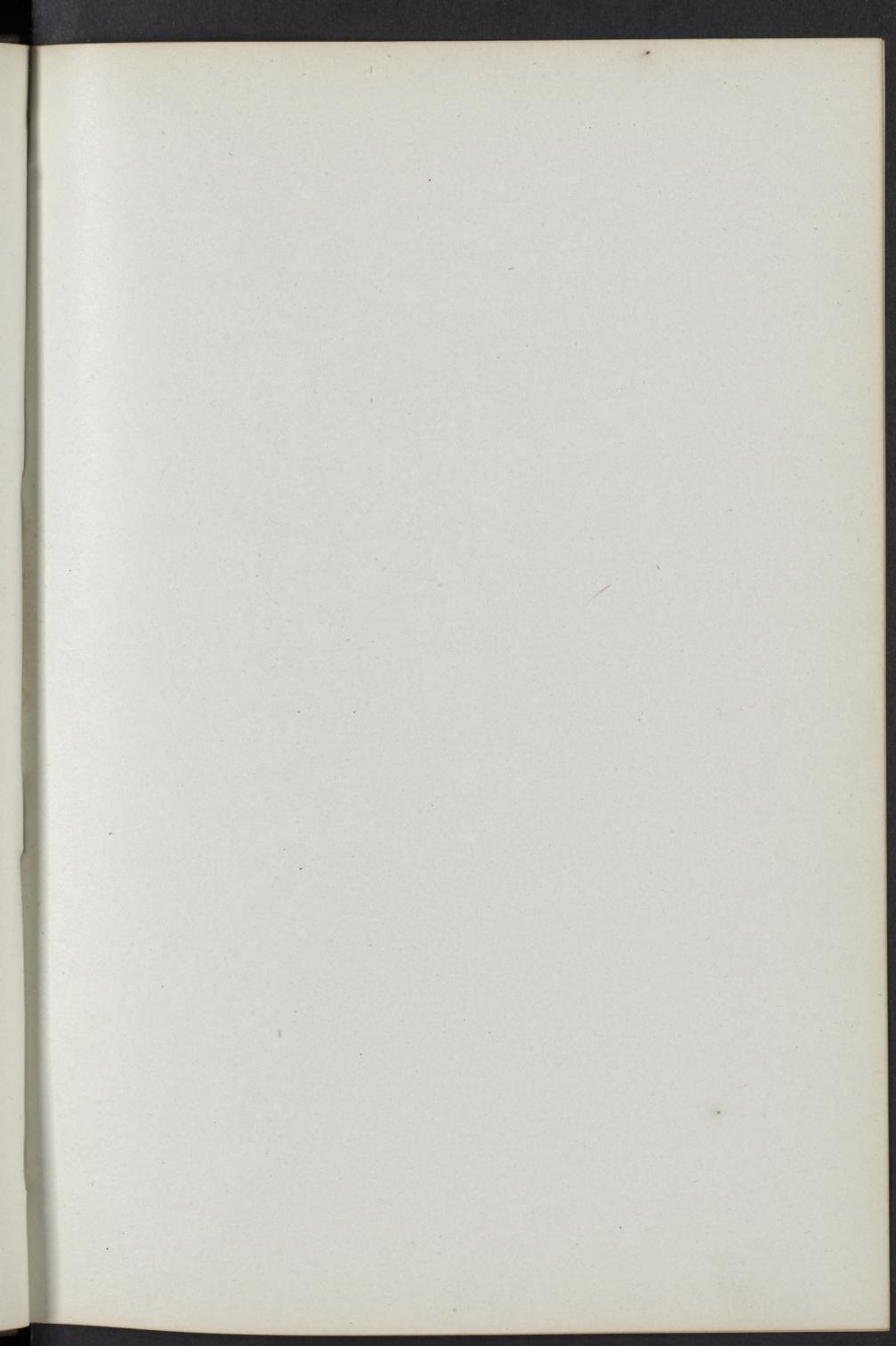
III. To reduce arterial circulation.

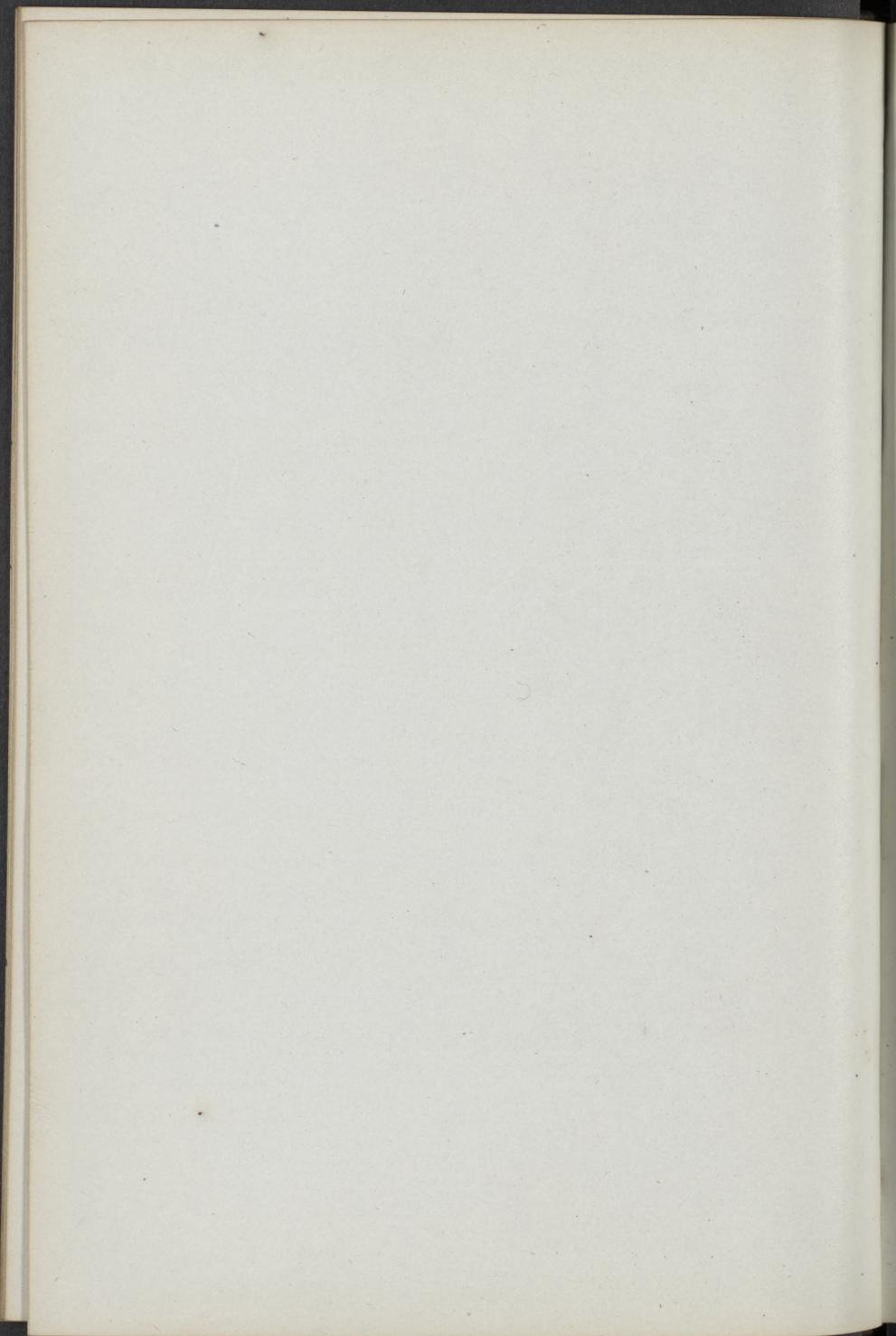
With this indication they are given -
partly in Fevers and inflammatory af-
fections. Haemorrhaage itself is depressing -
to the circulation, but as a large amount
of secretory fluid is removed by the dis-
charge from the emunctaries, the vessels -
are deprived of a considerable quantity -
of fluid, which takes off tension from -
them. They further are depressing to the -
circulation by removing aliment from -
the stomach, which if digested and
carried into the bowels would tend to -
augment the volume of blood & aggra-
vate inflammation.

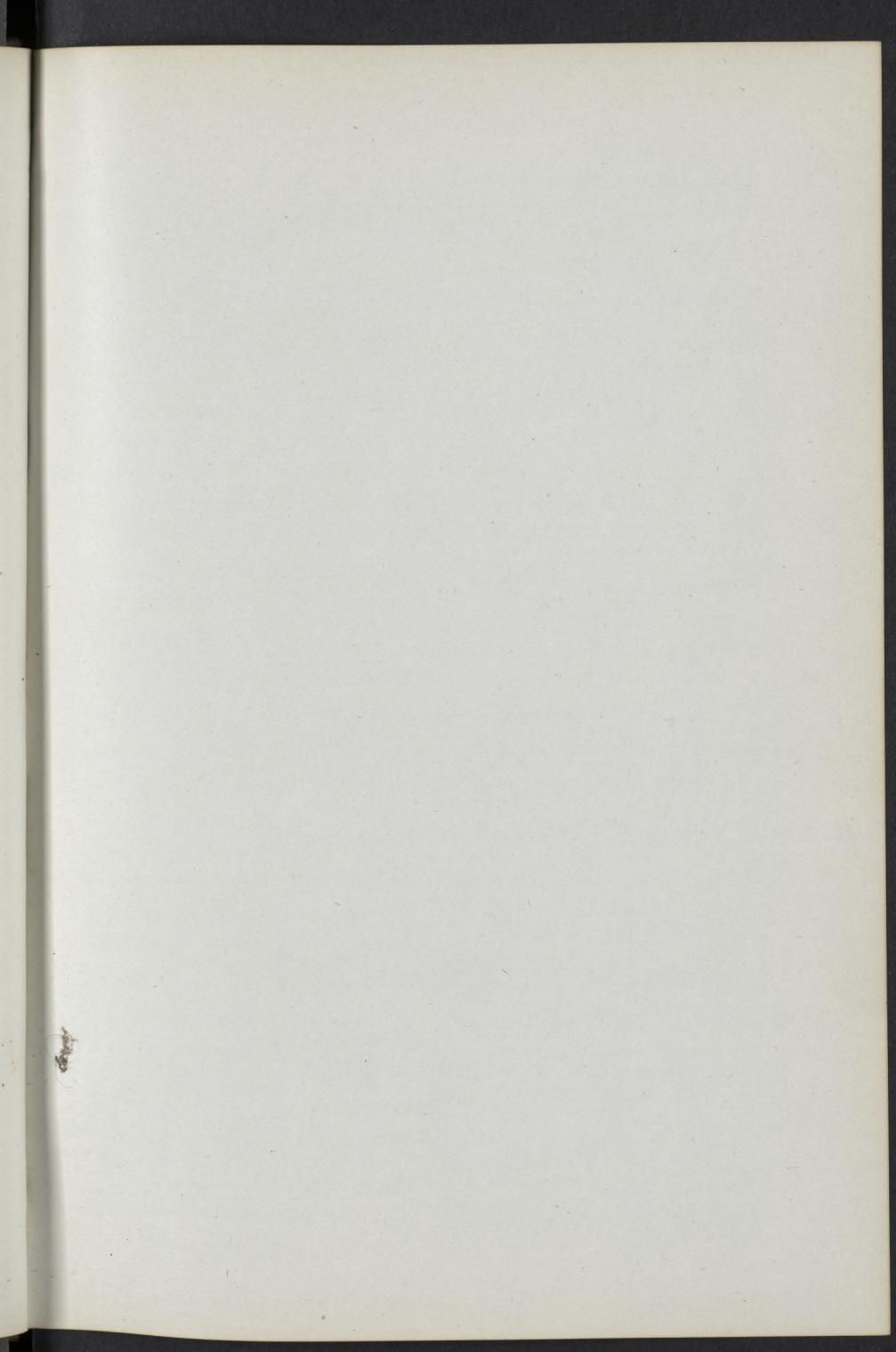


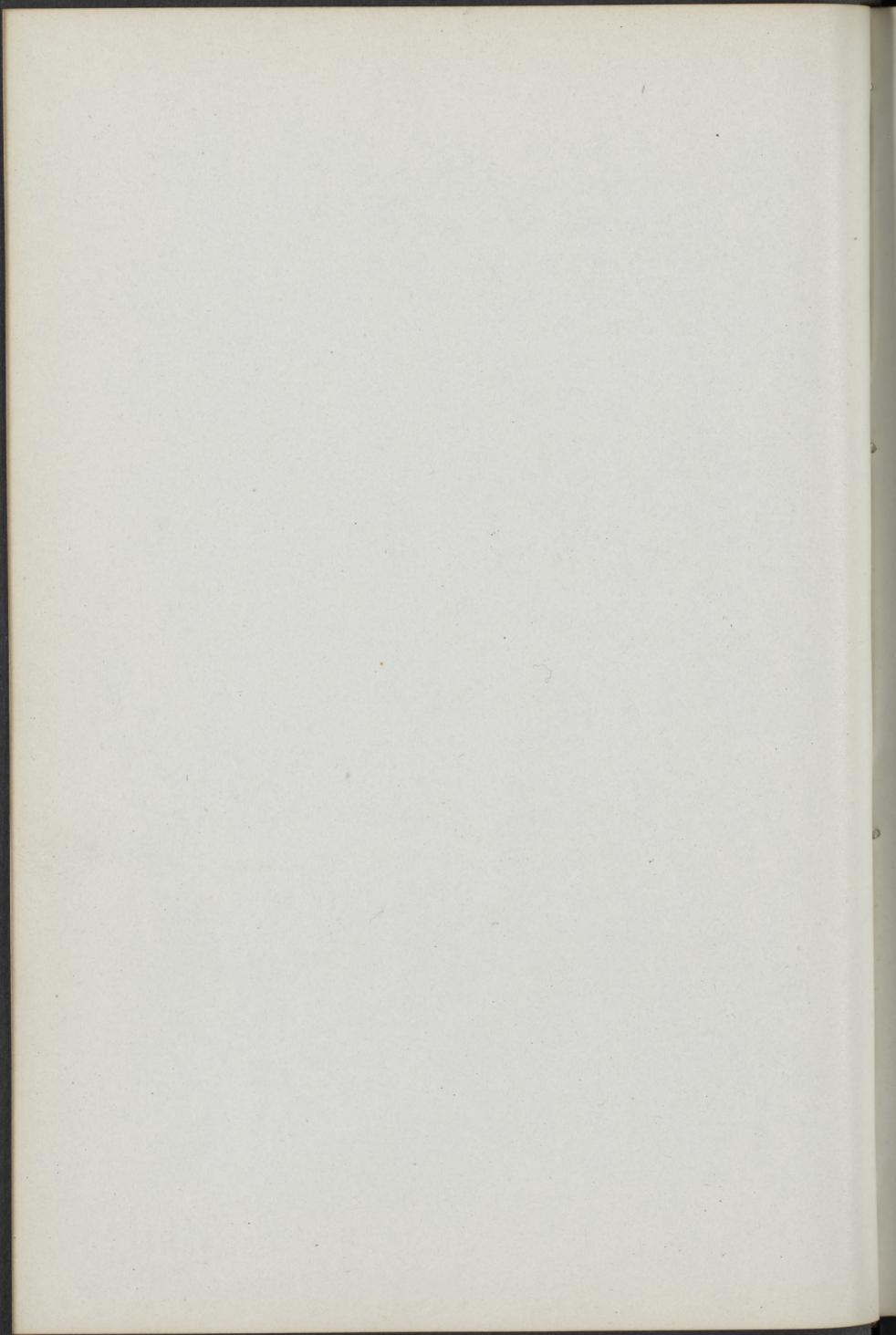


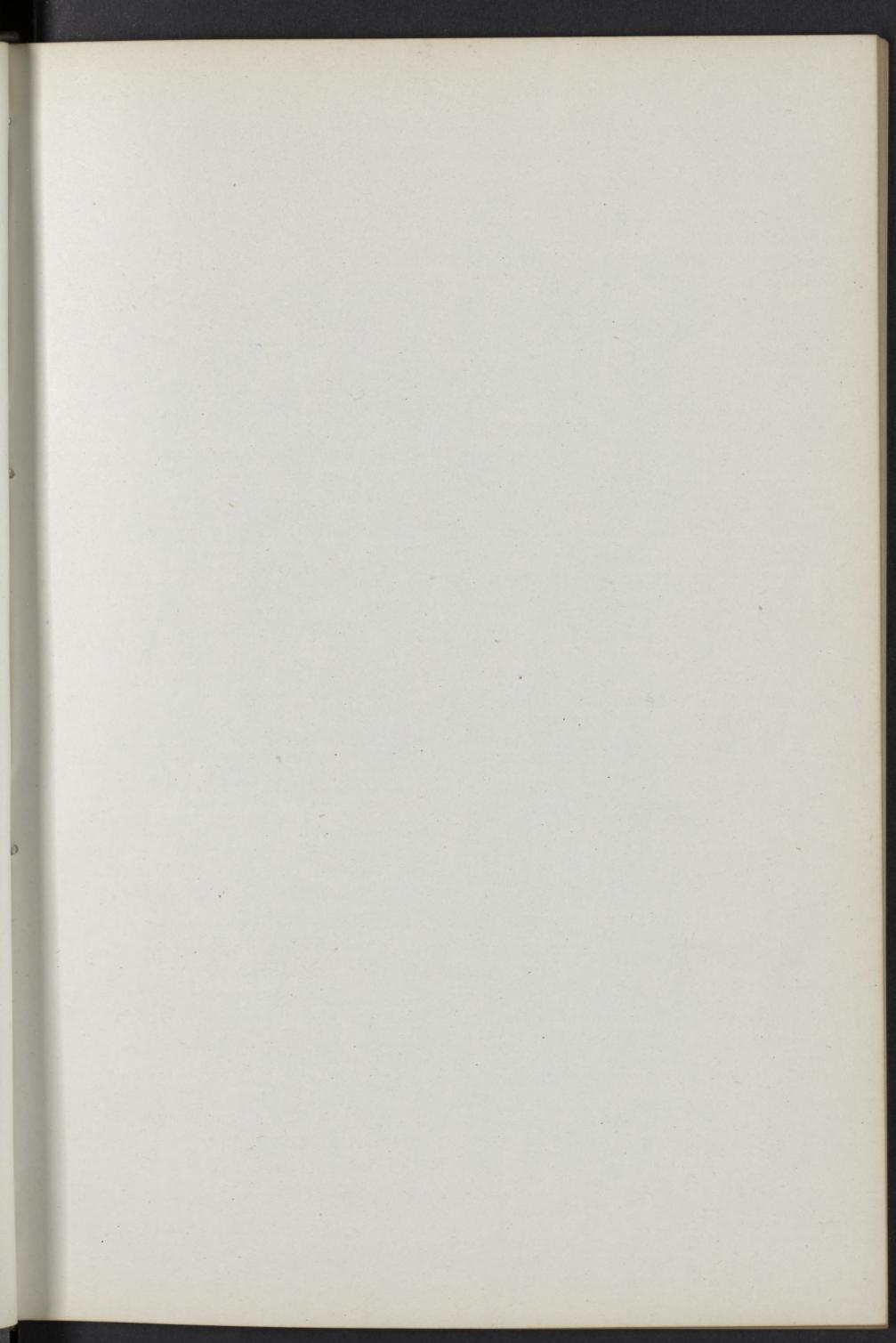


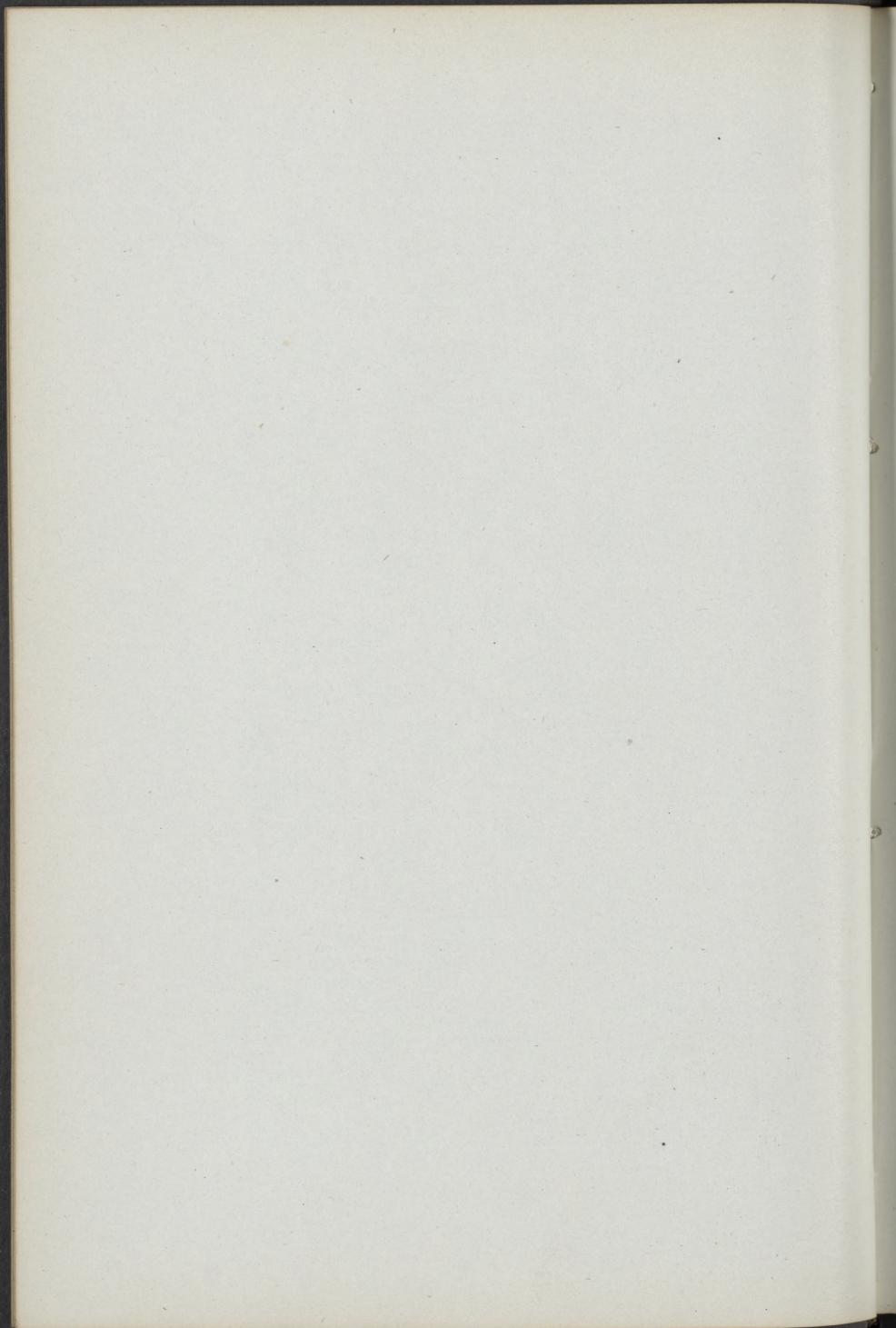


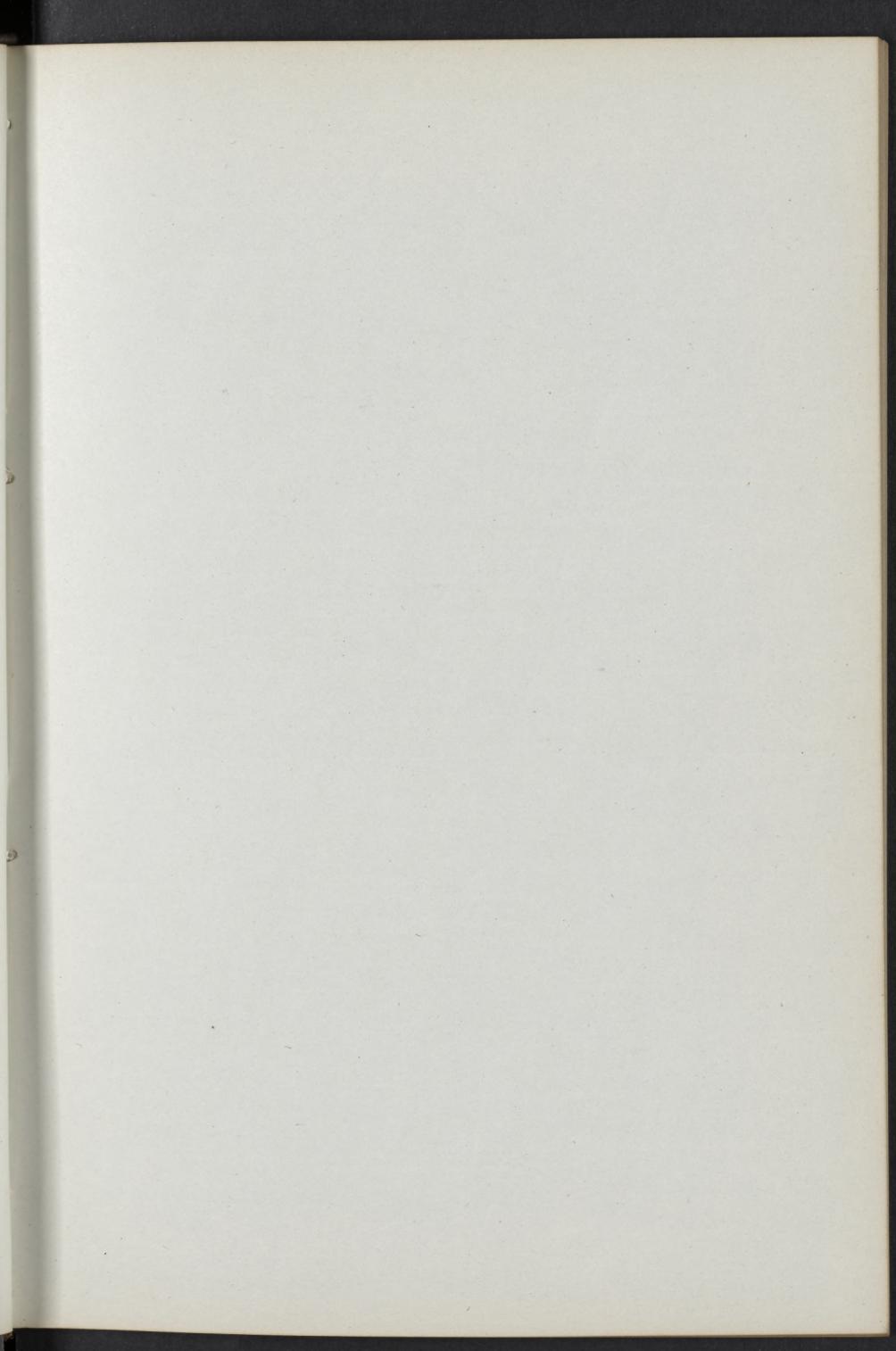


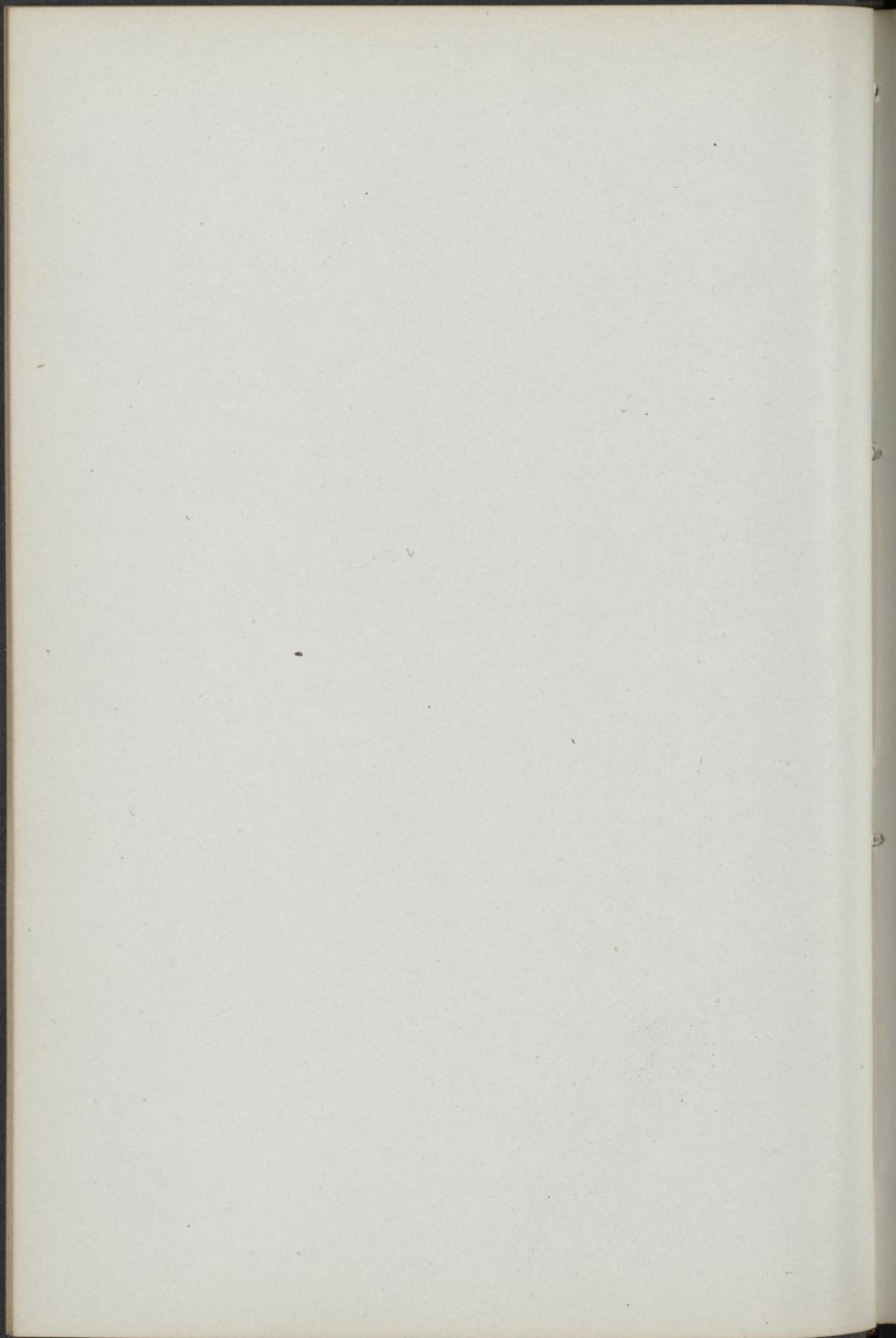


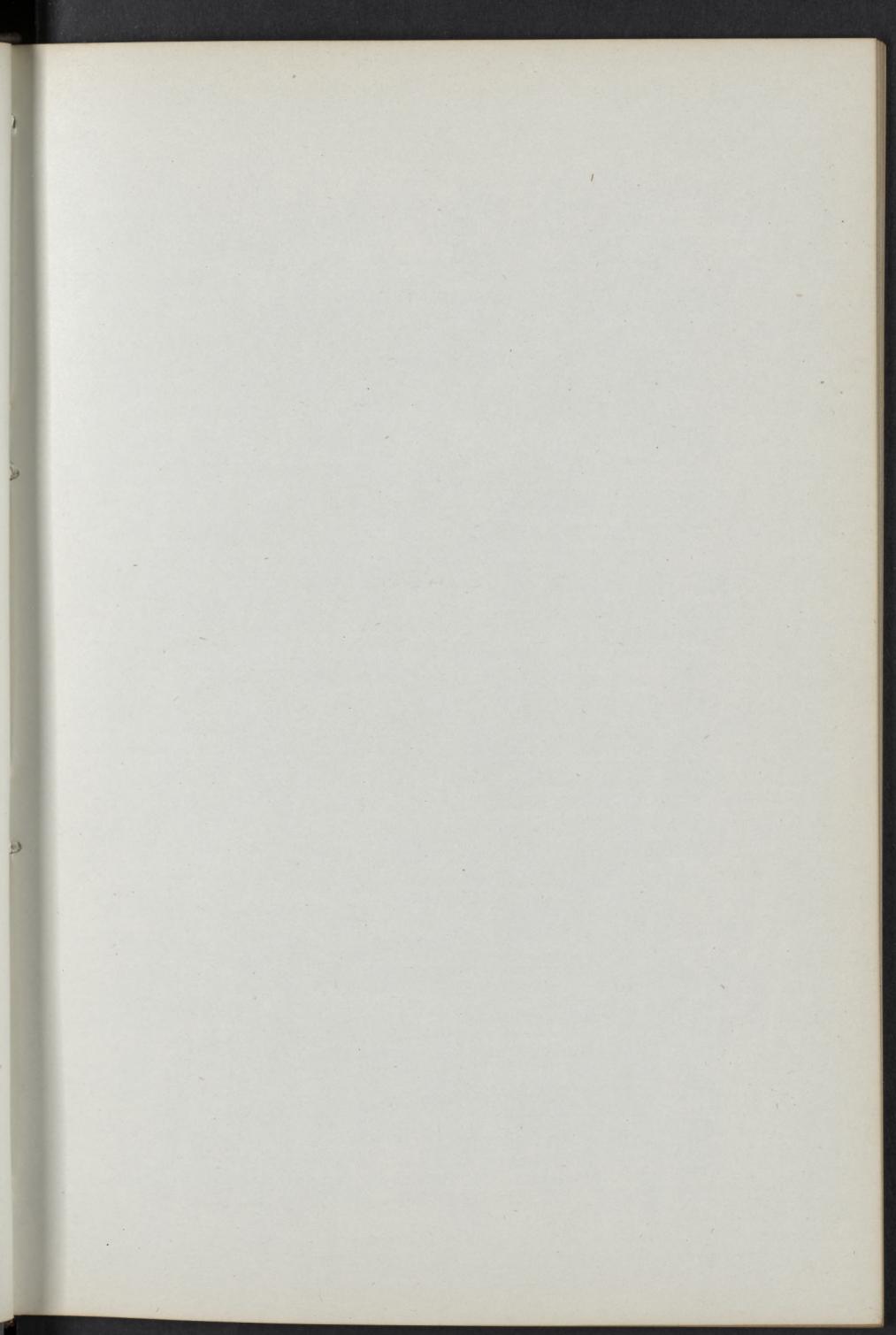


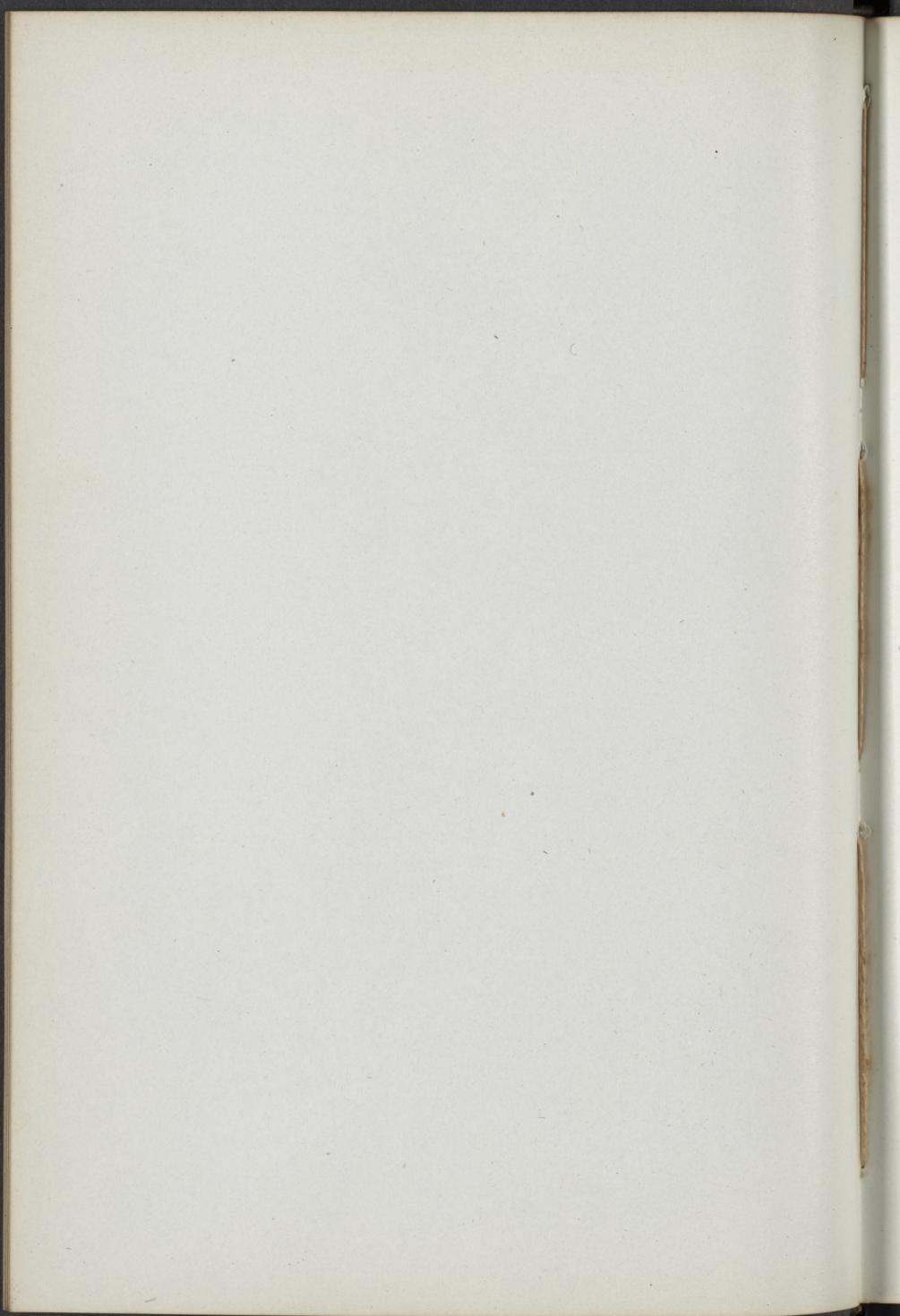


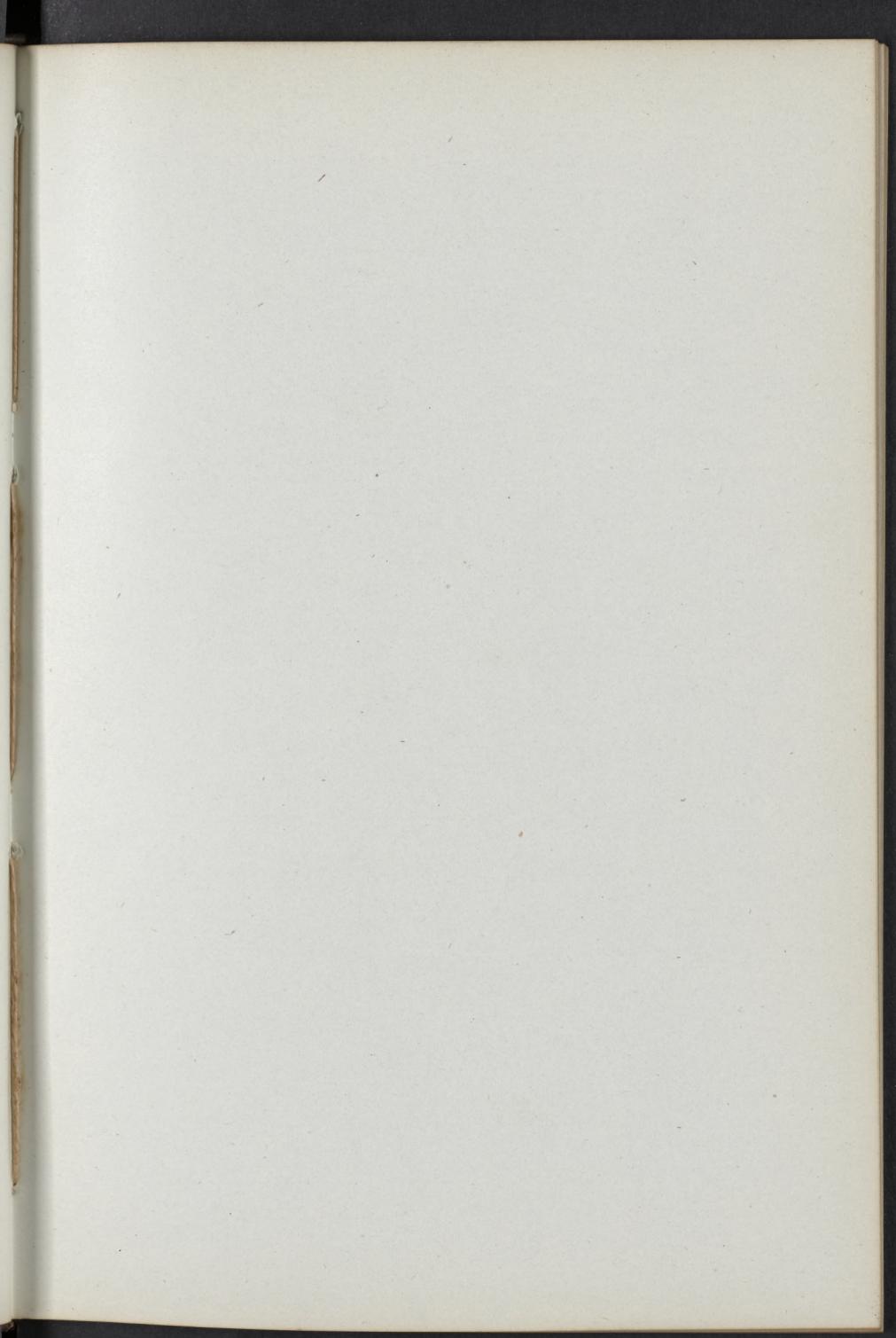


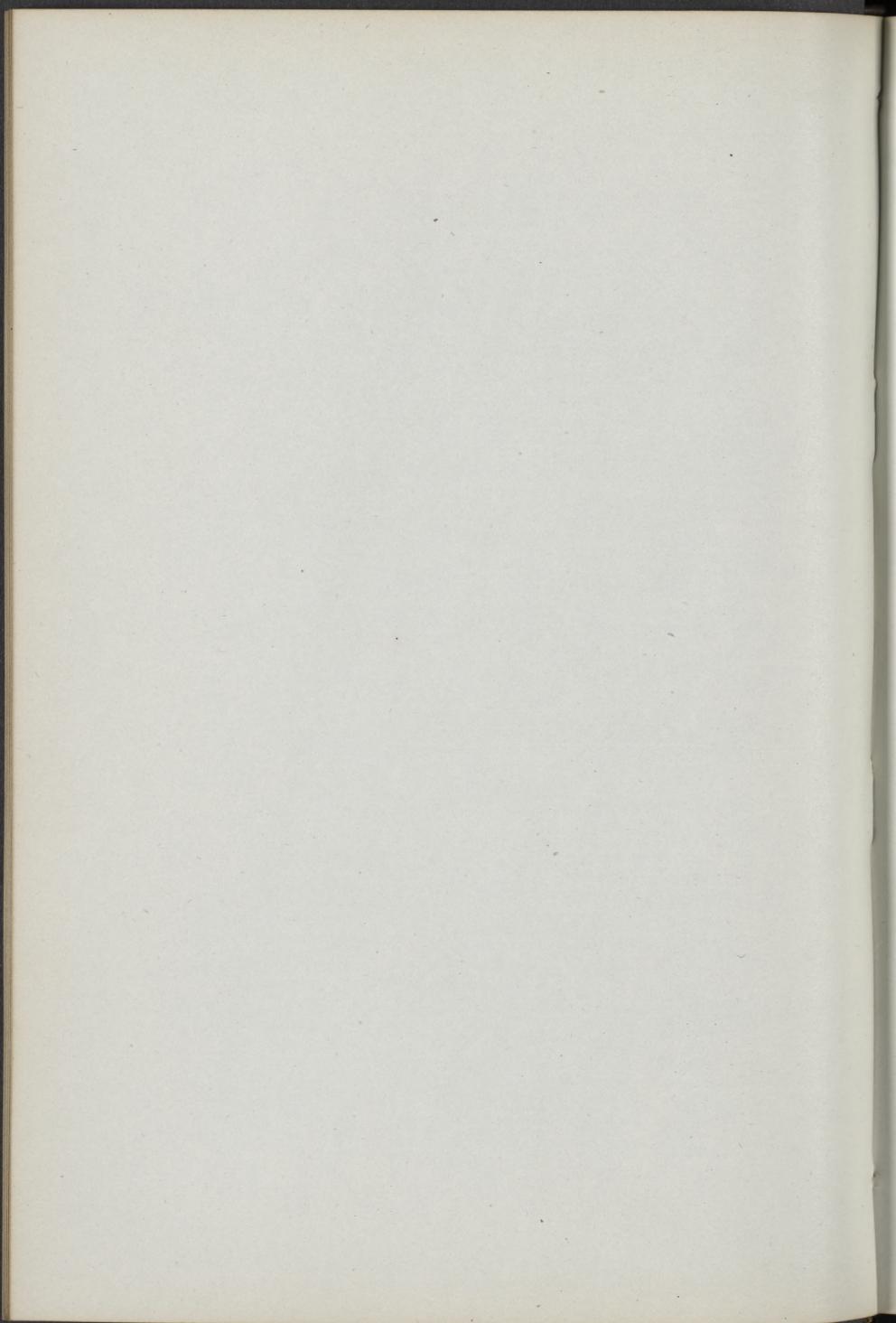


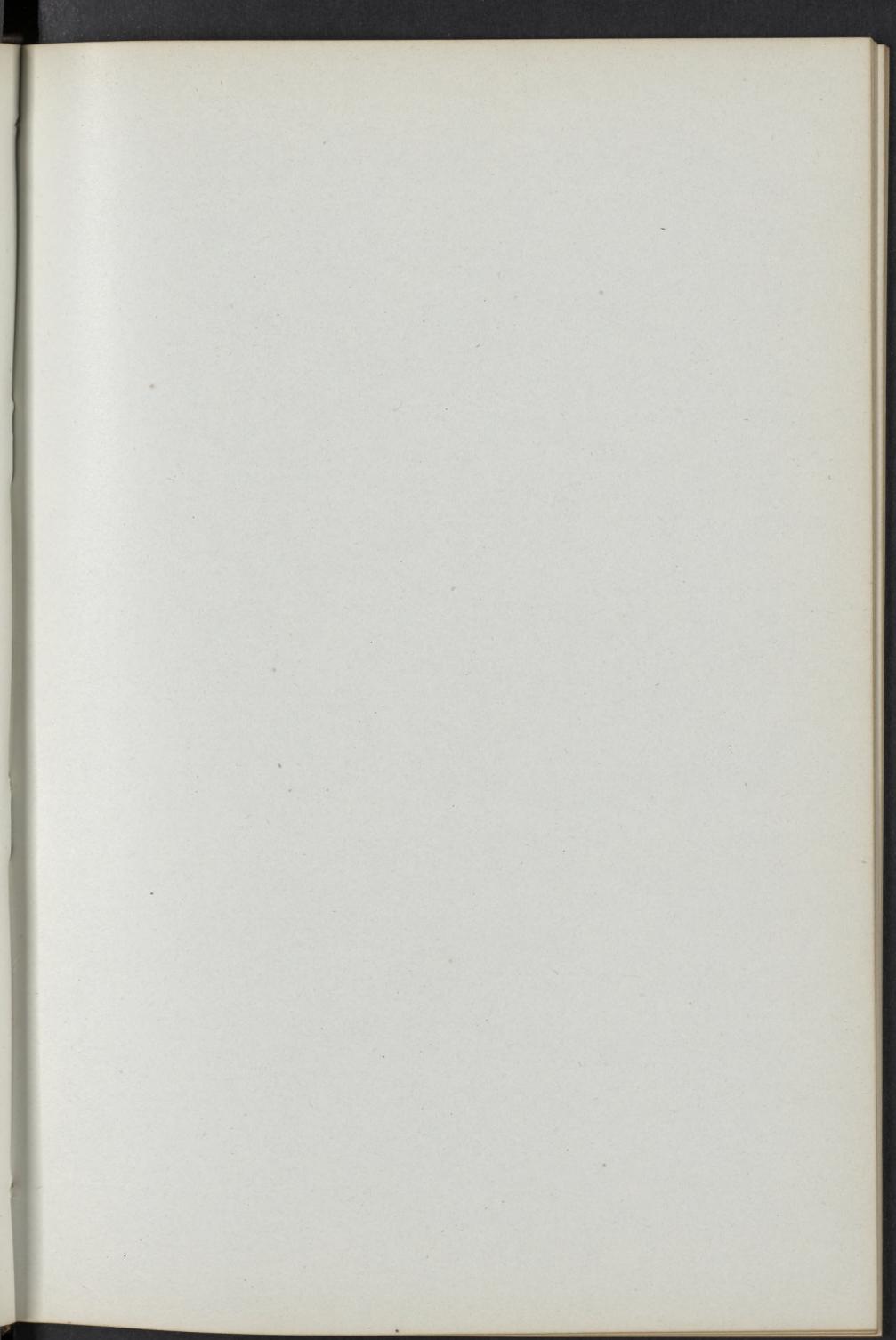


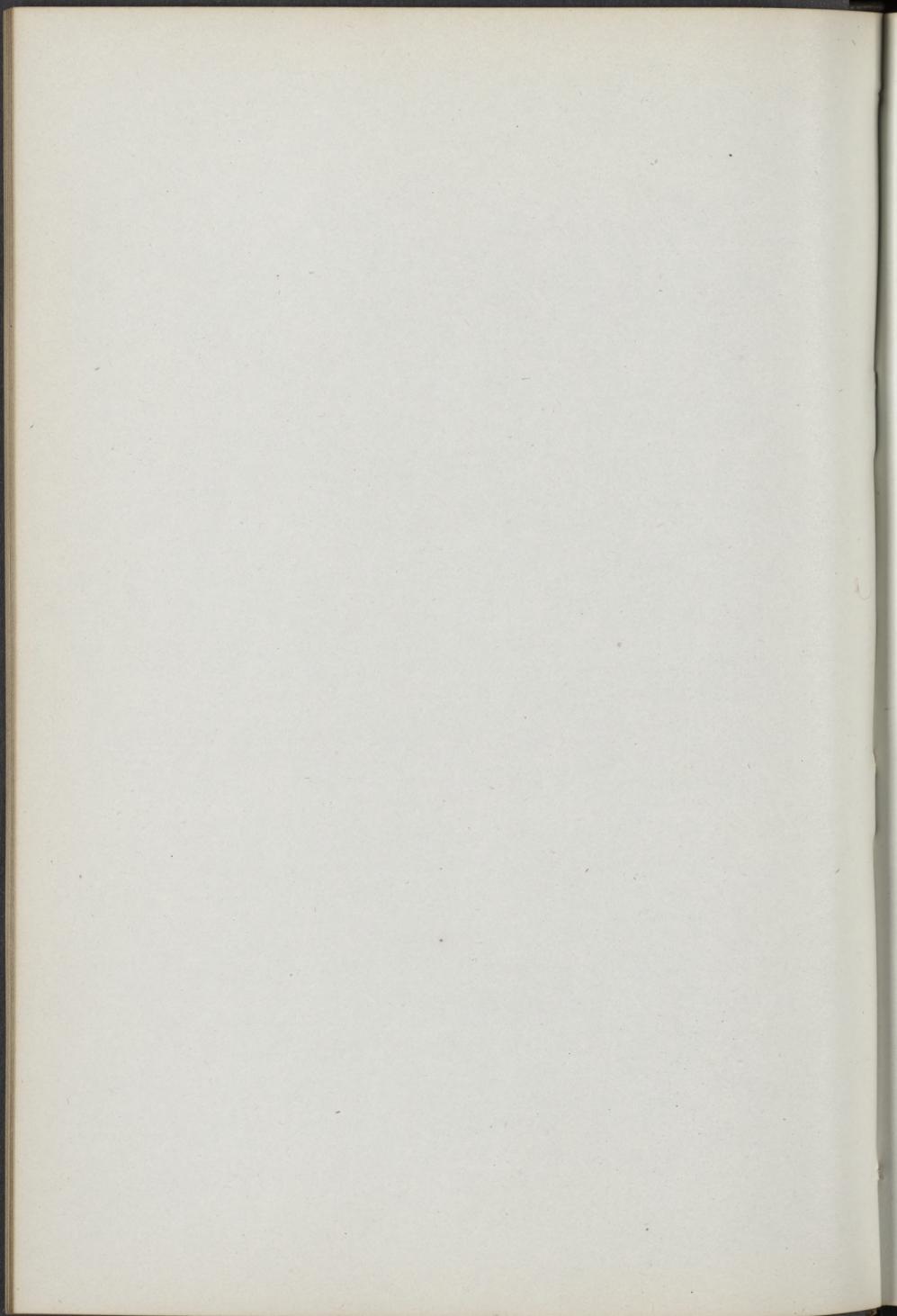


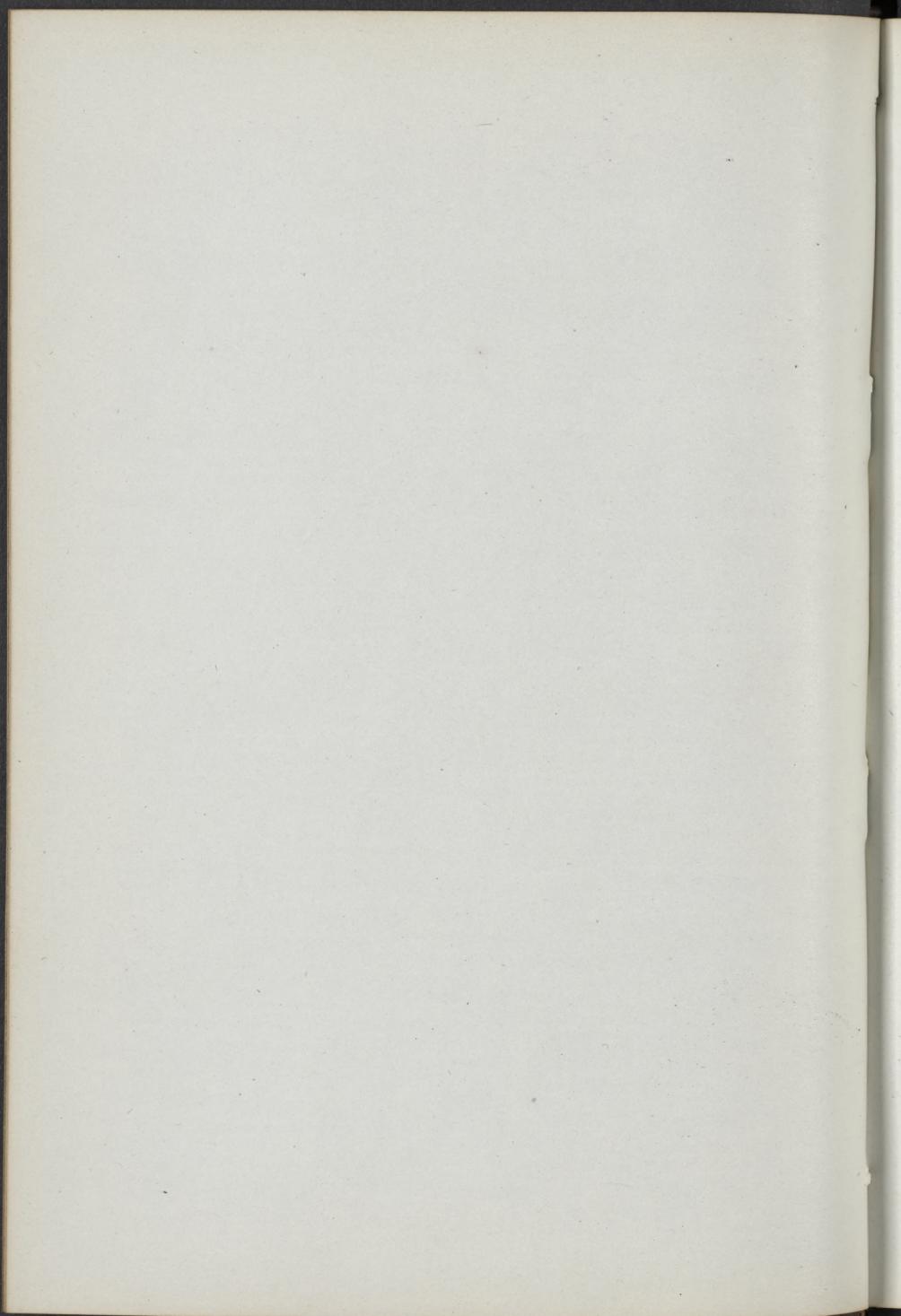


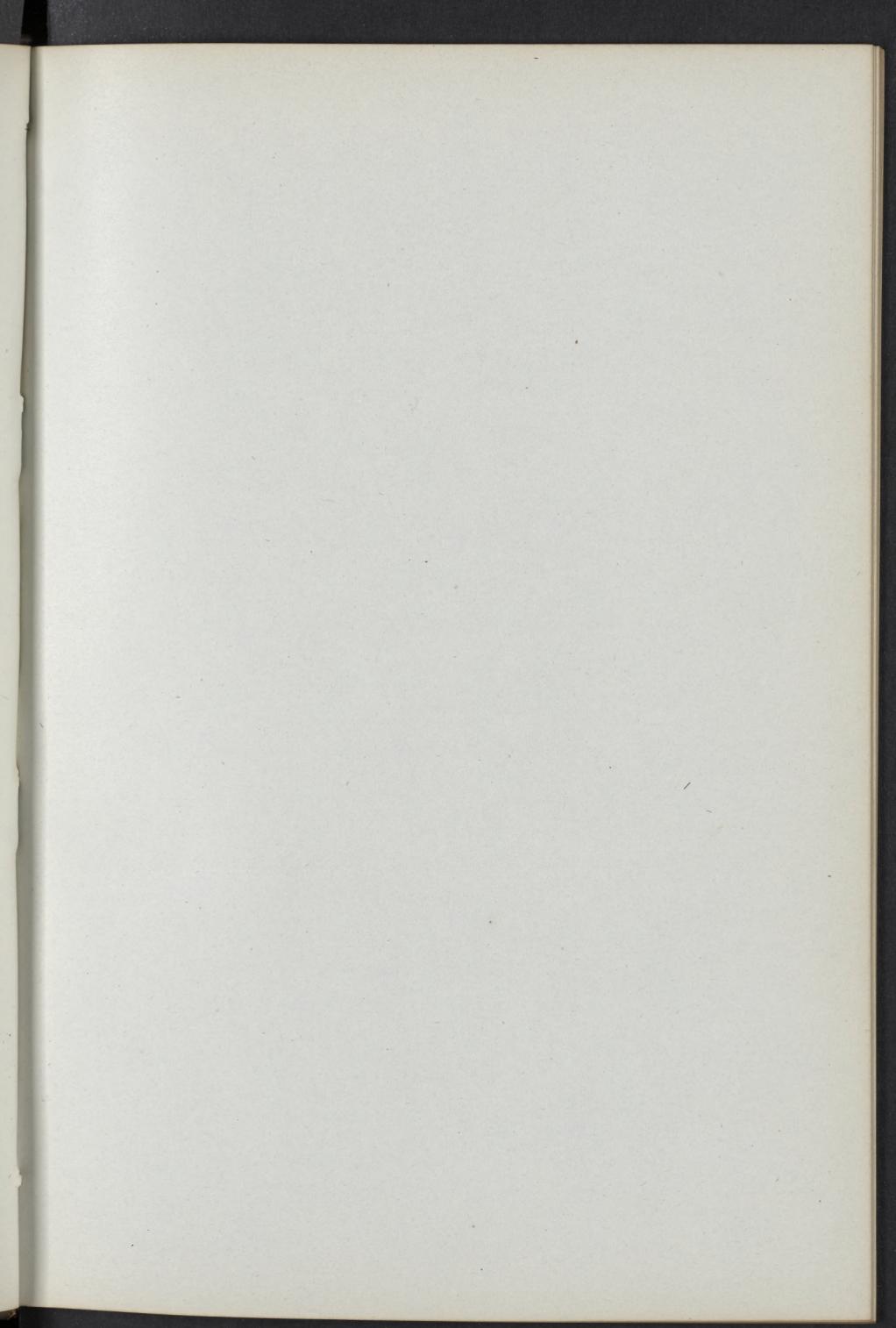


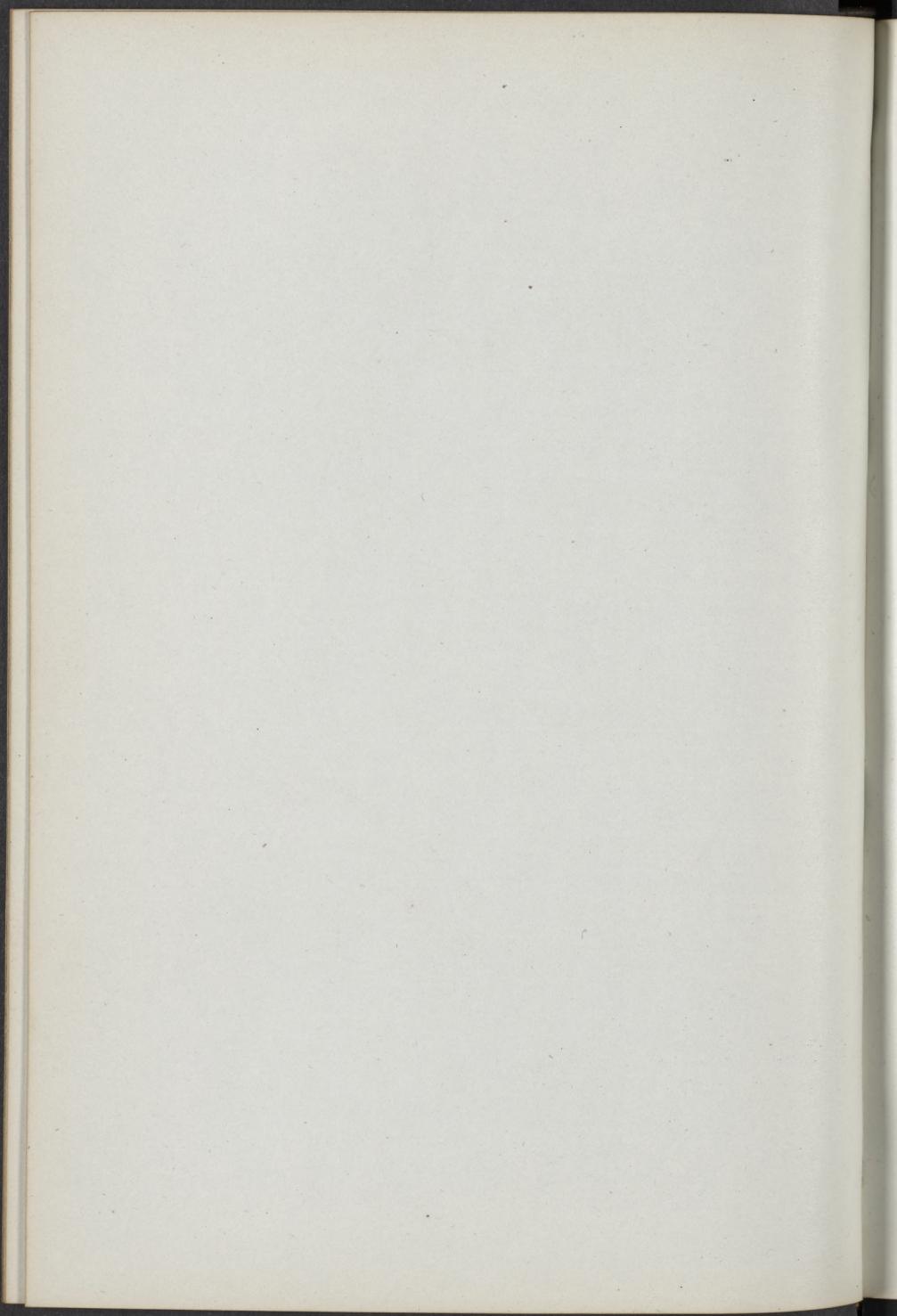


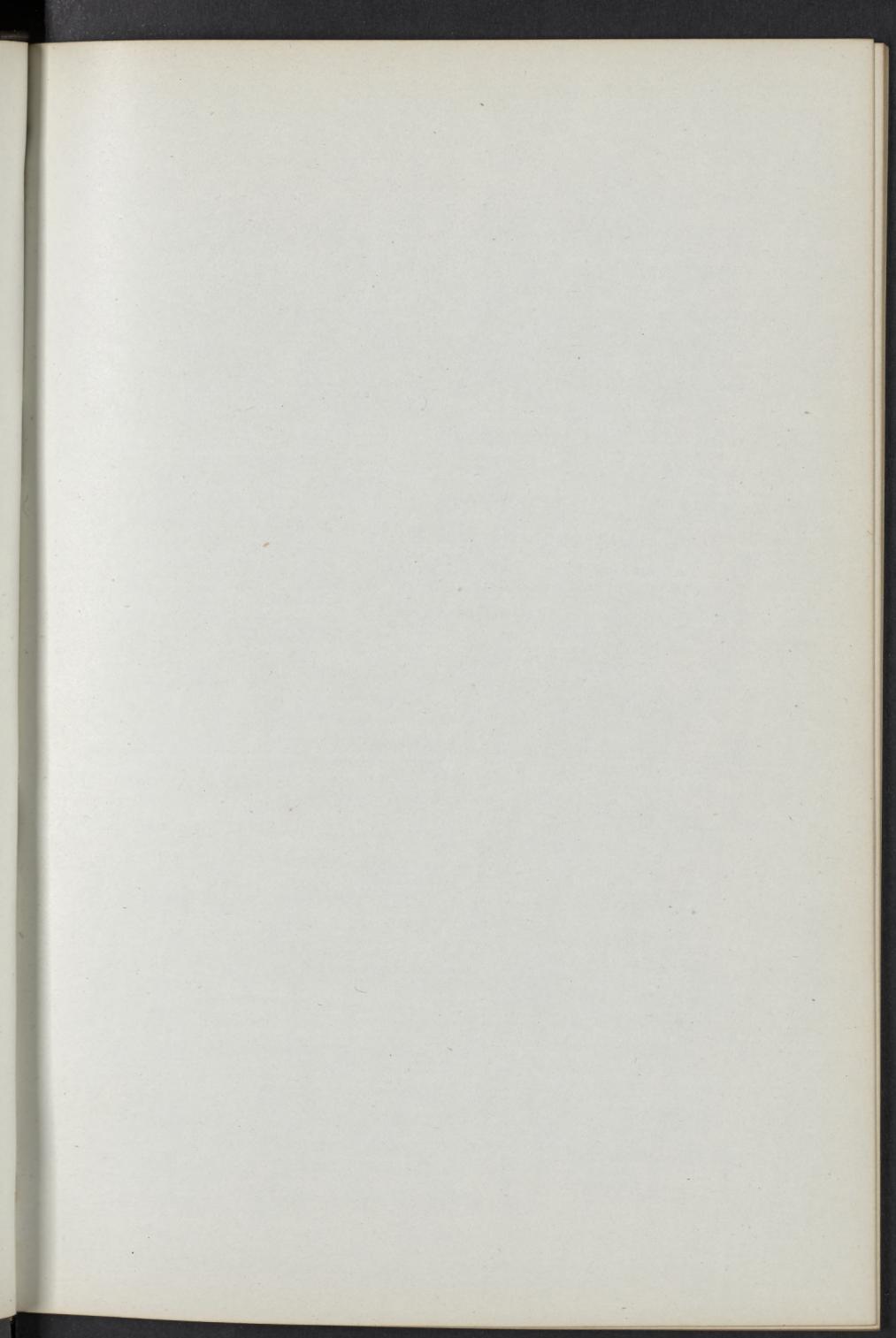


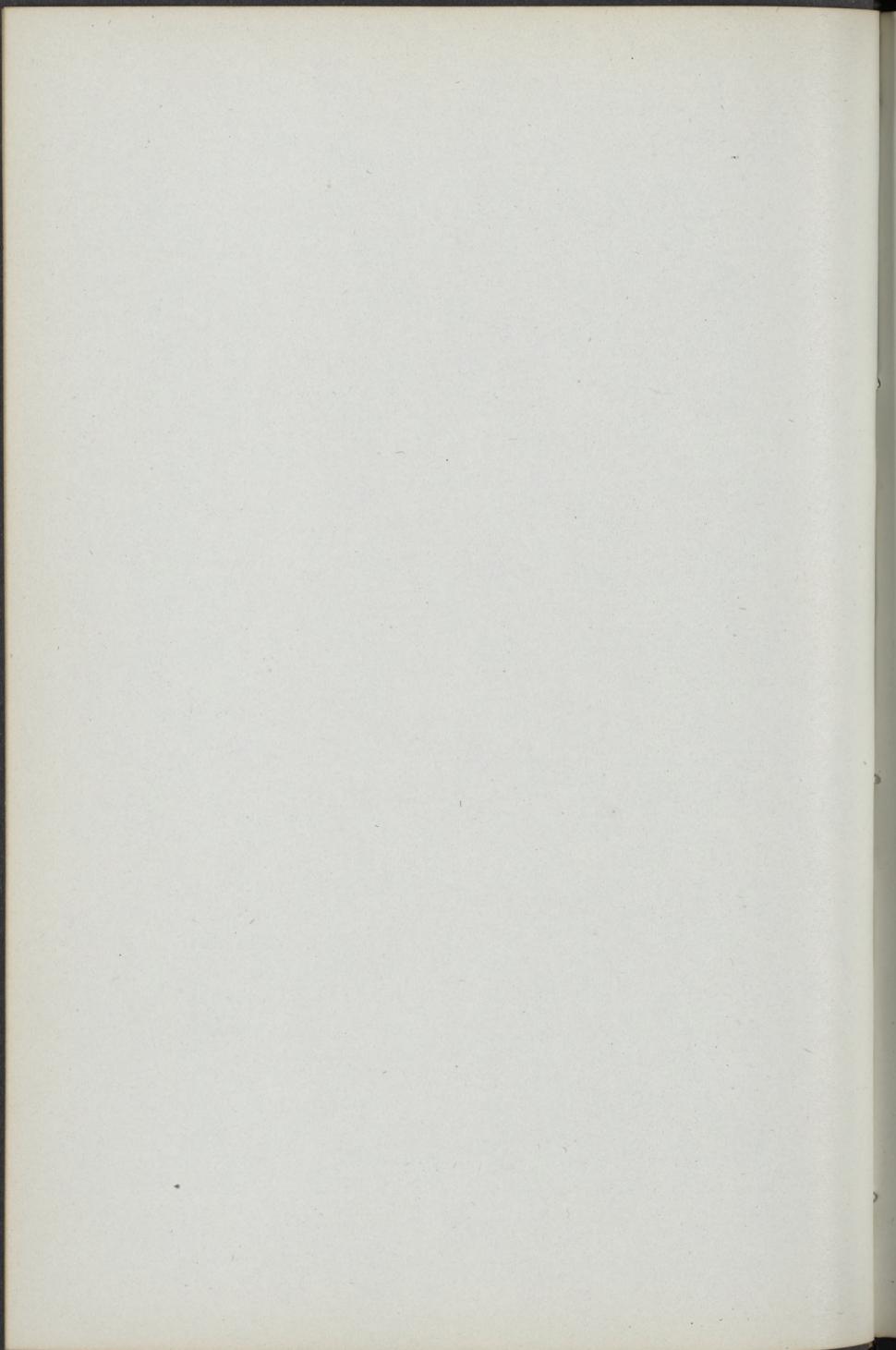


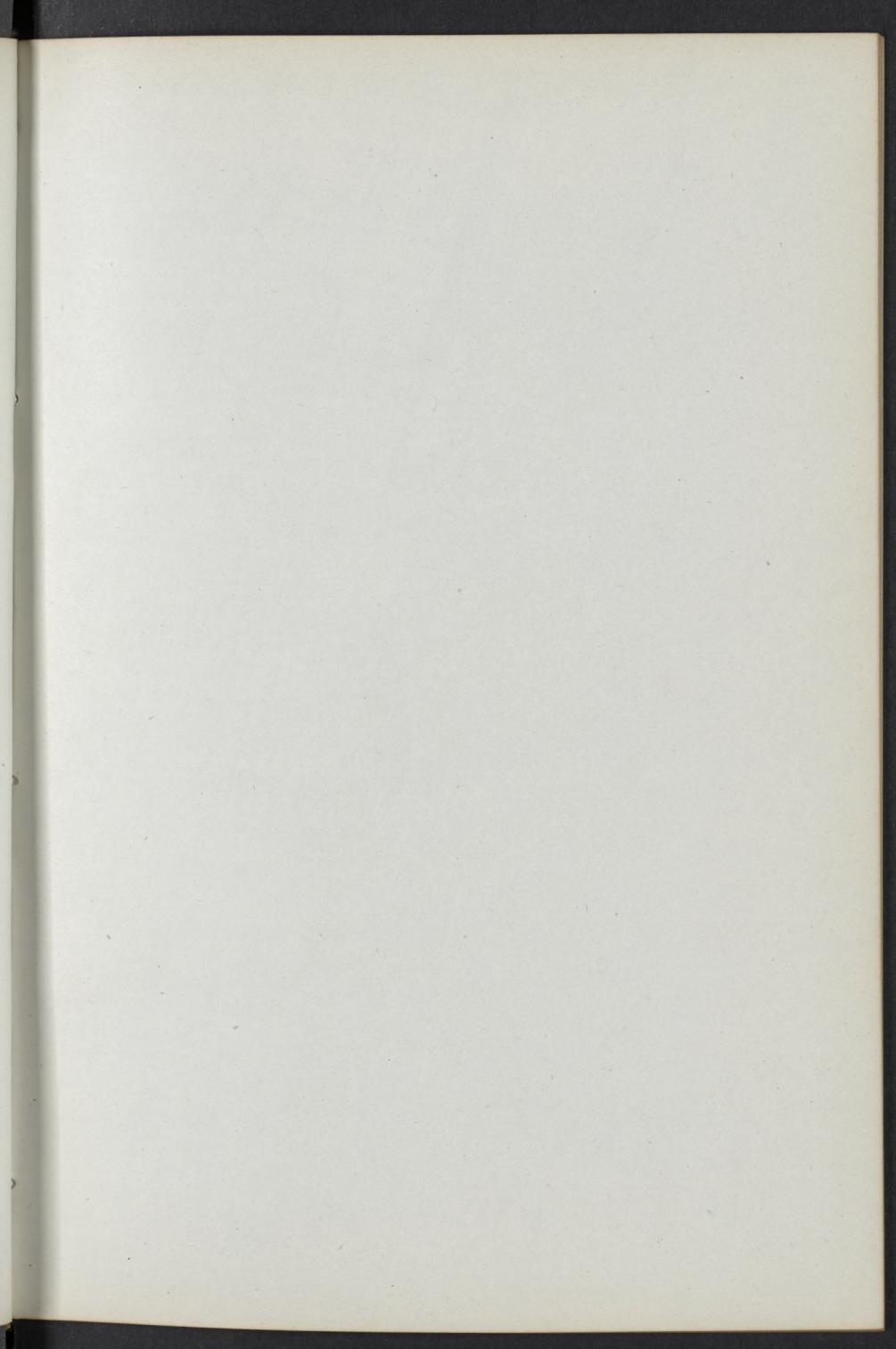


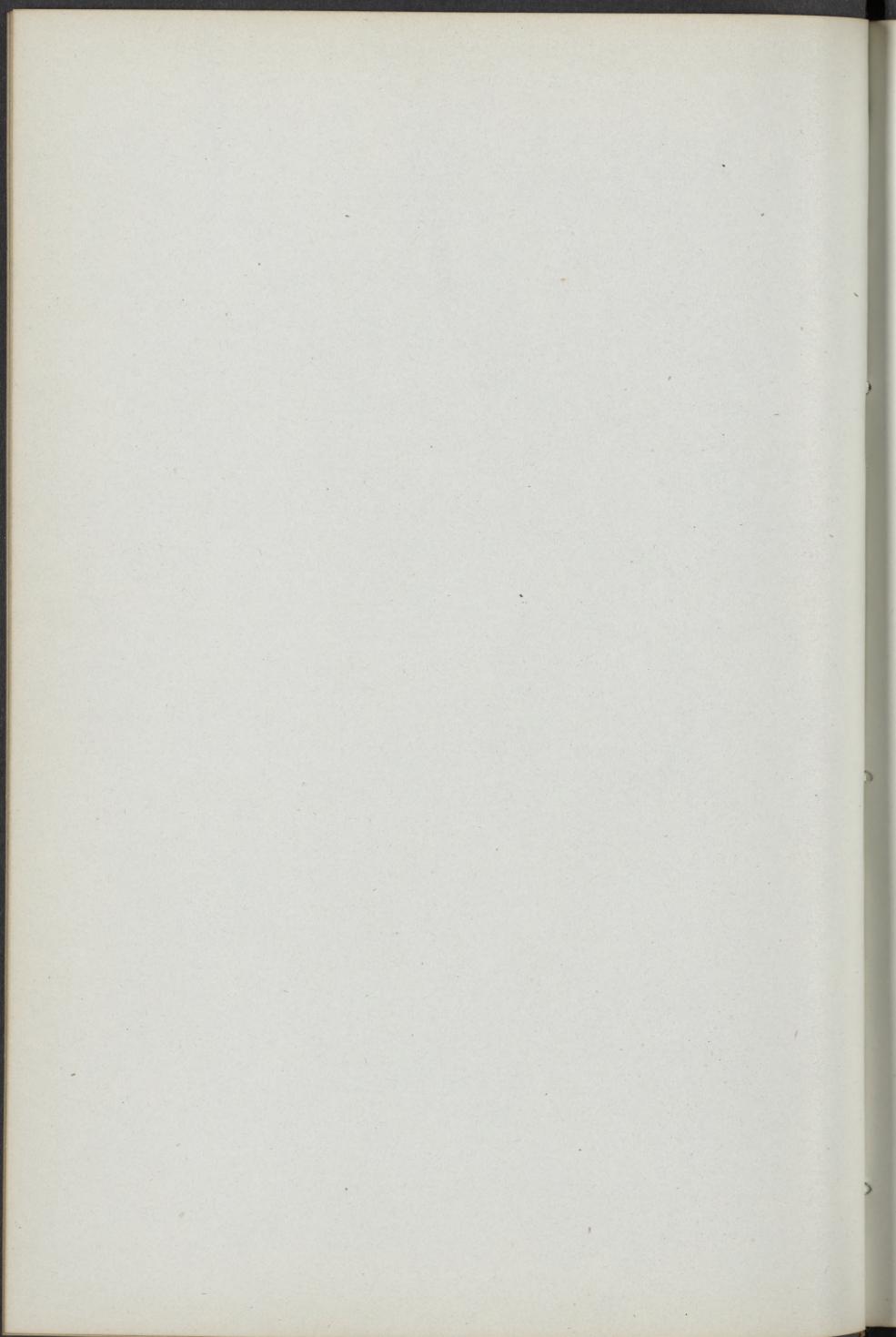


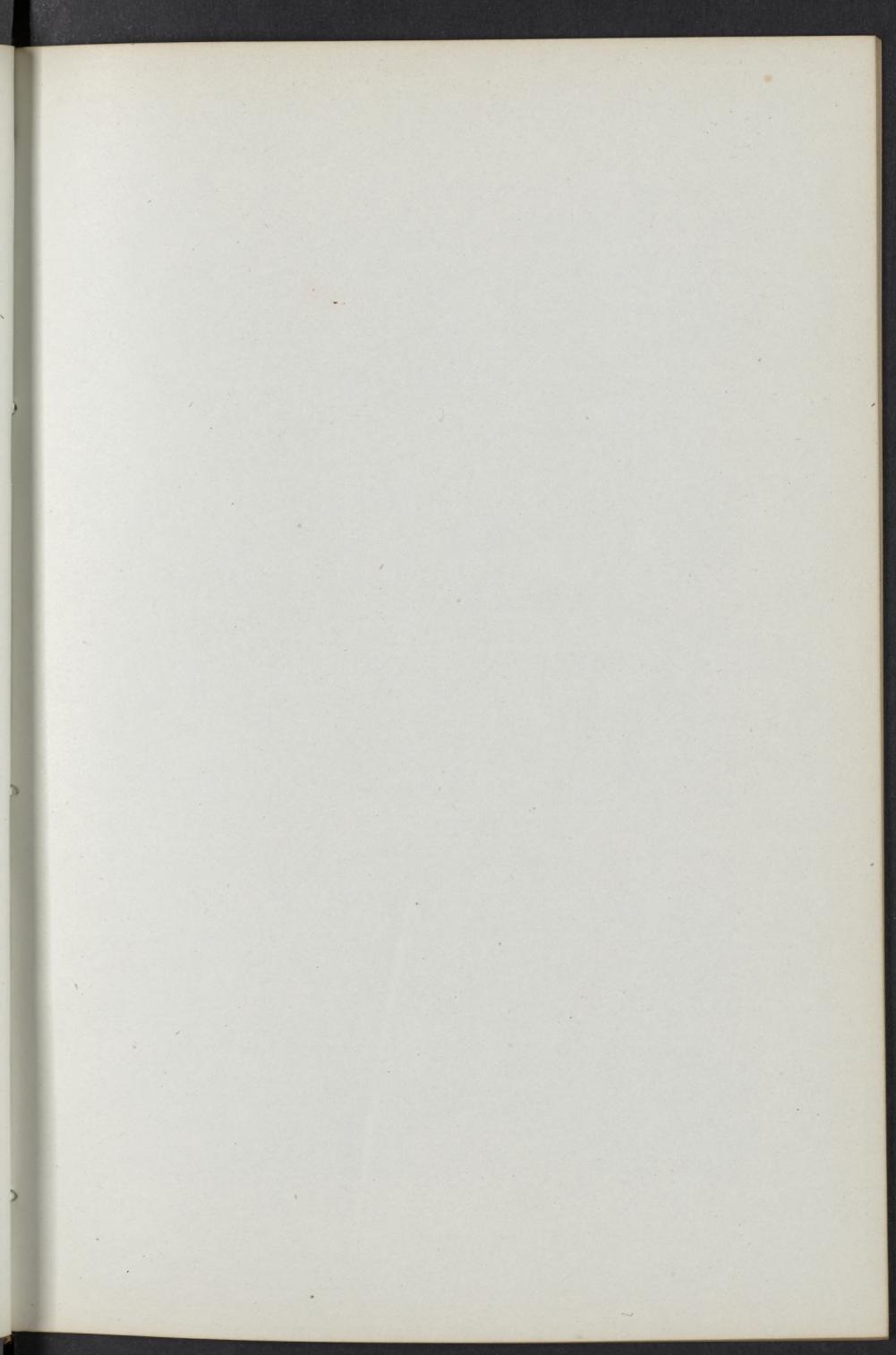


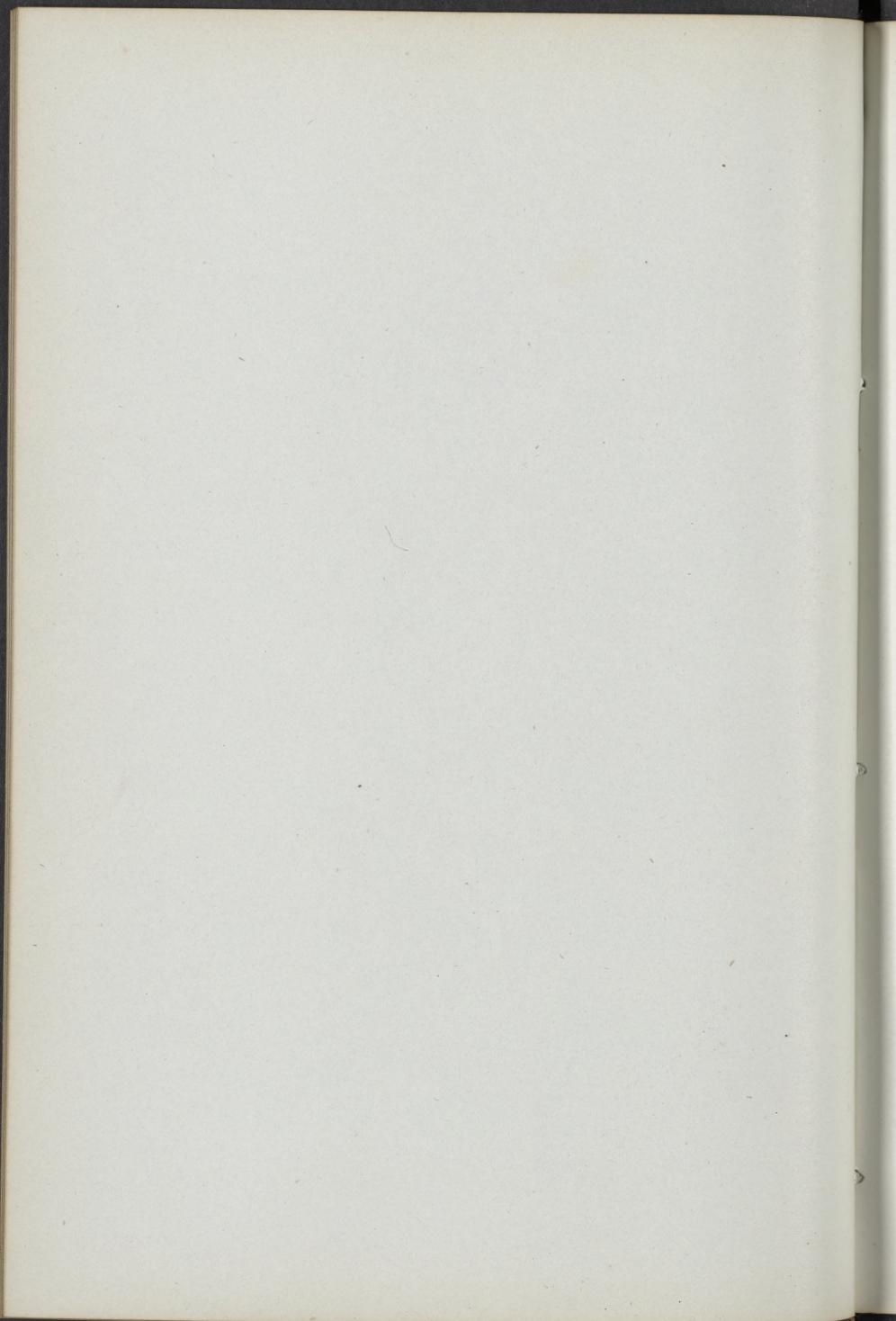


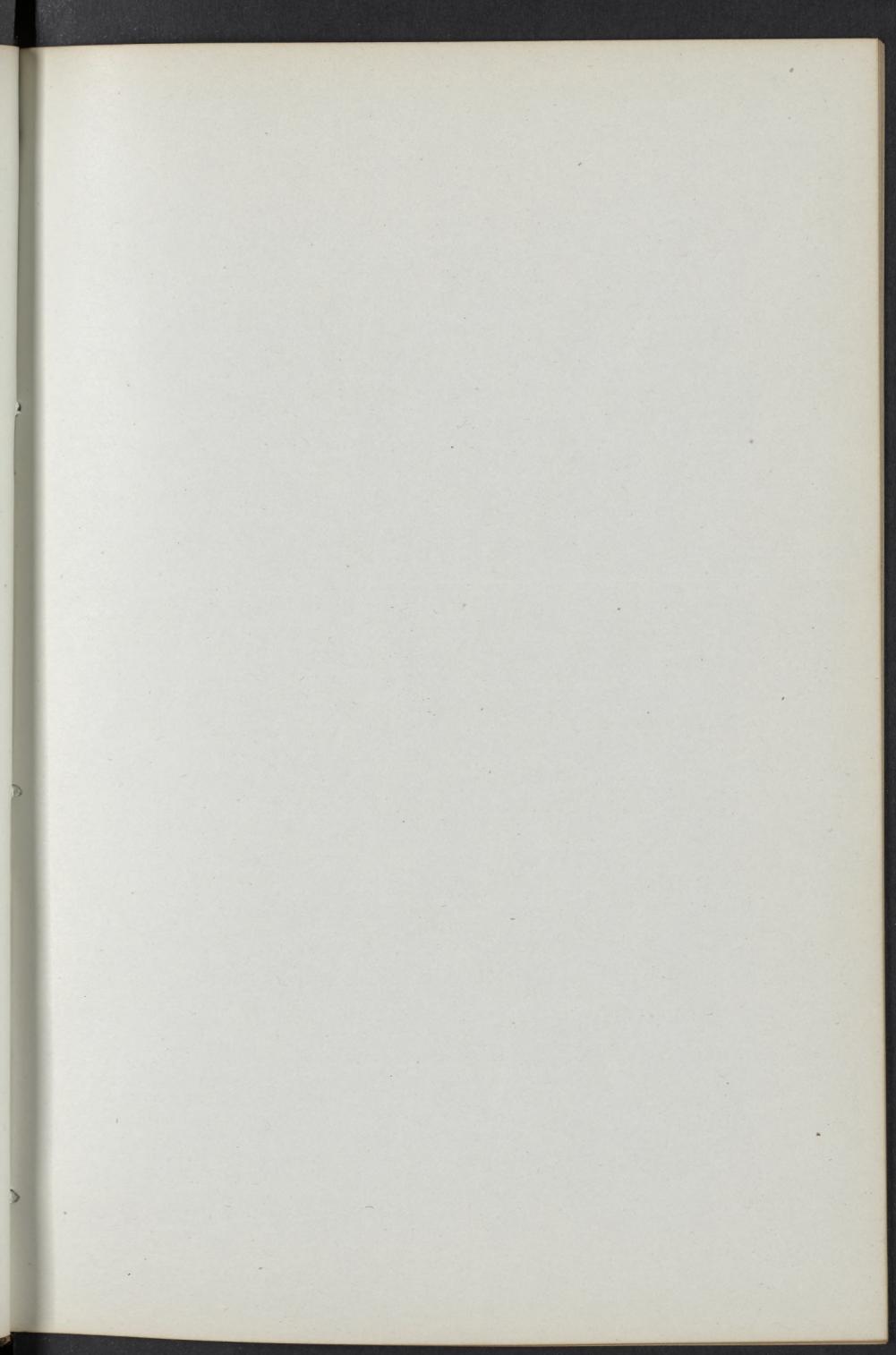


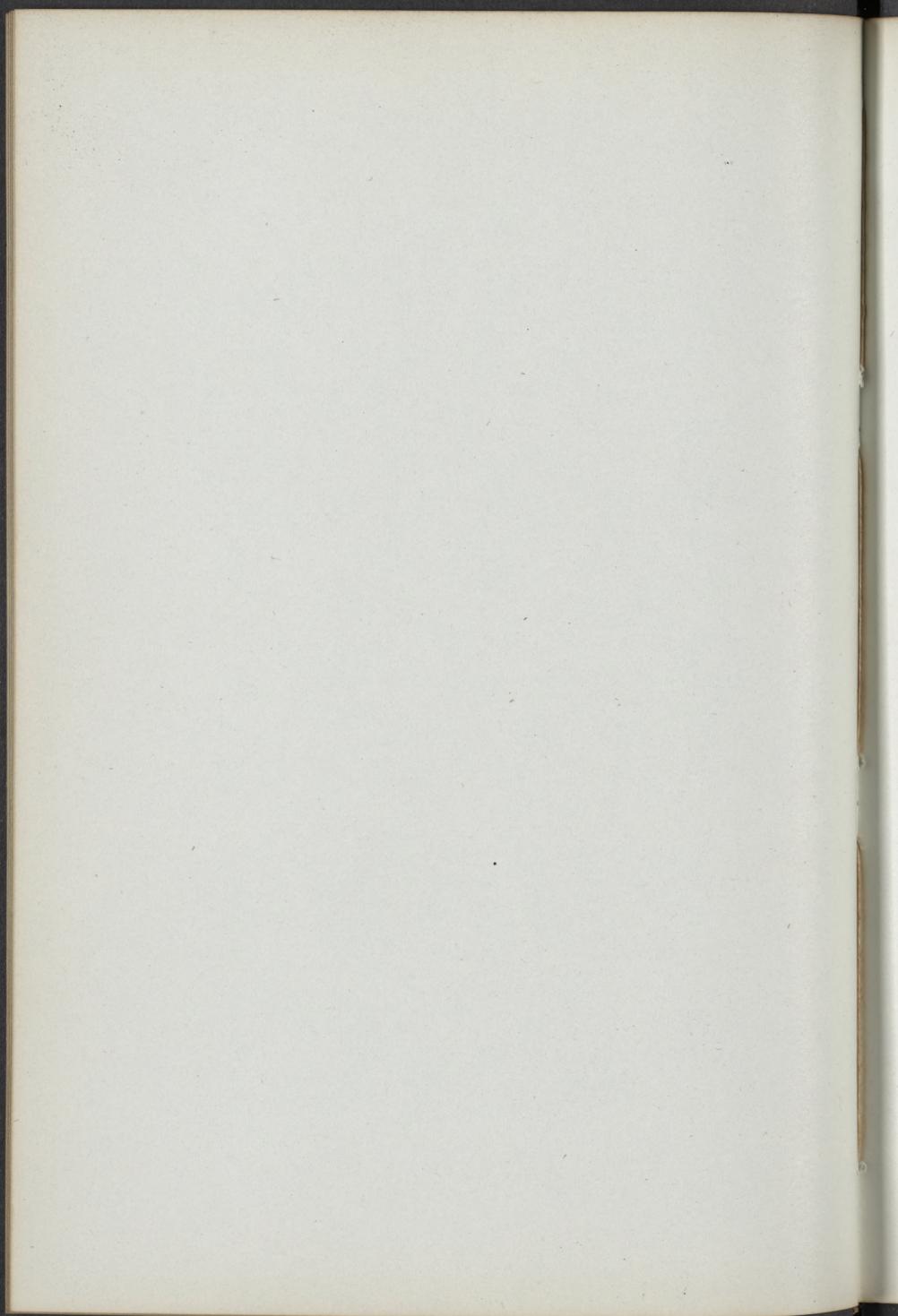


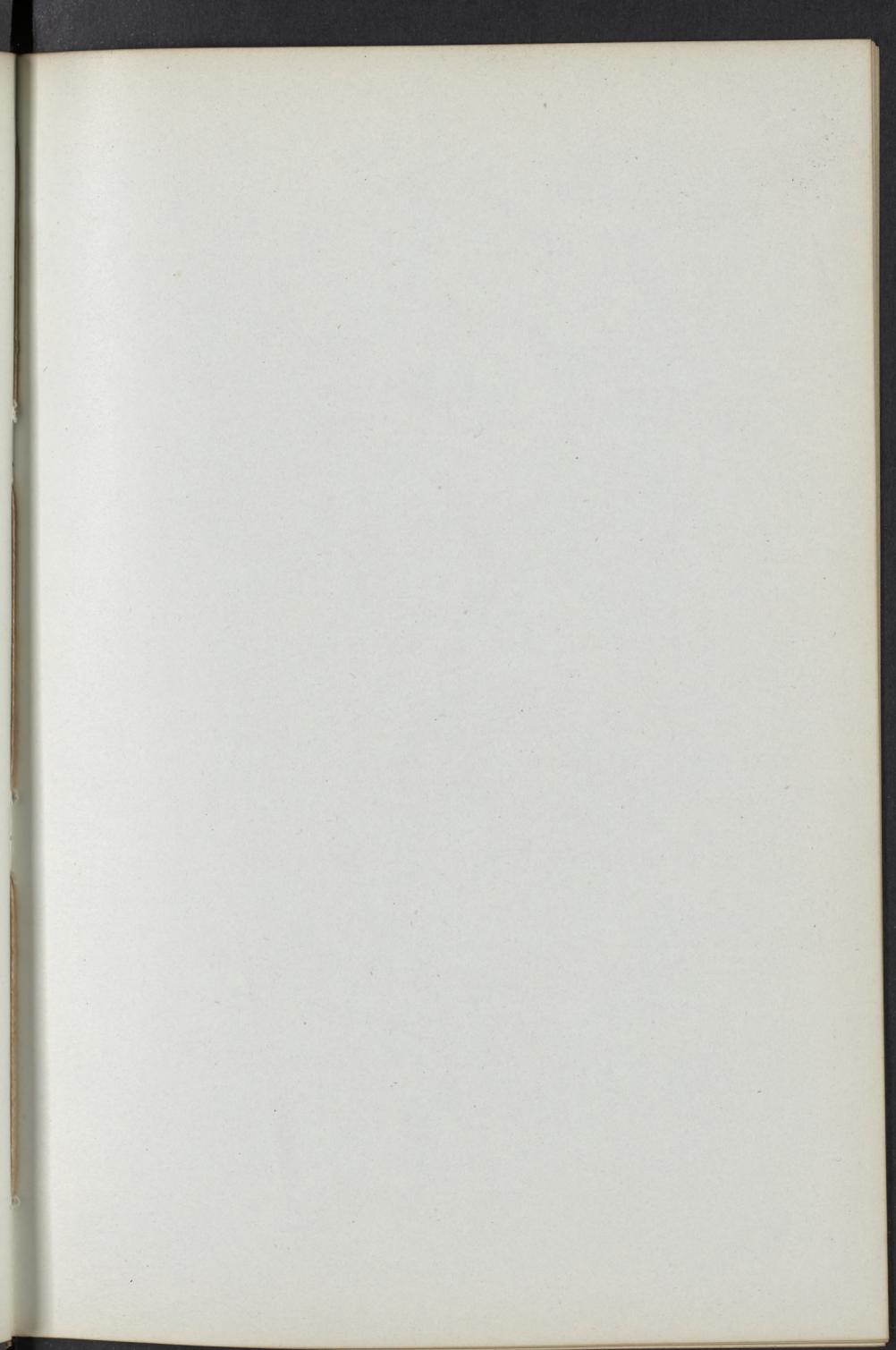


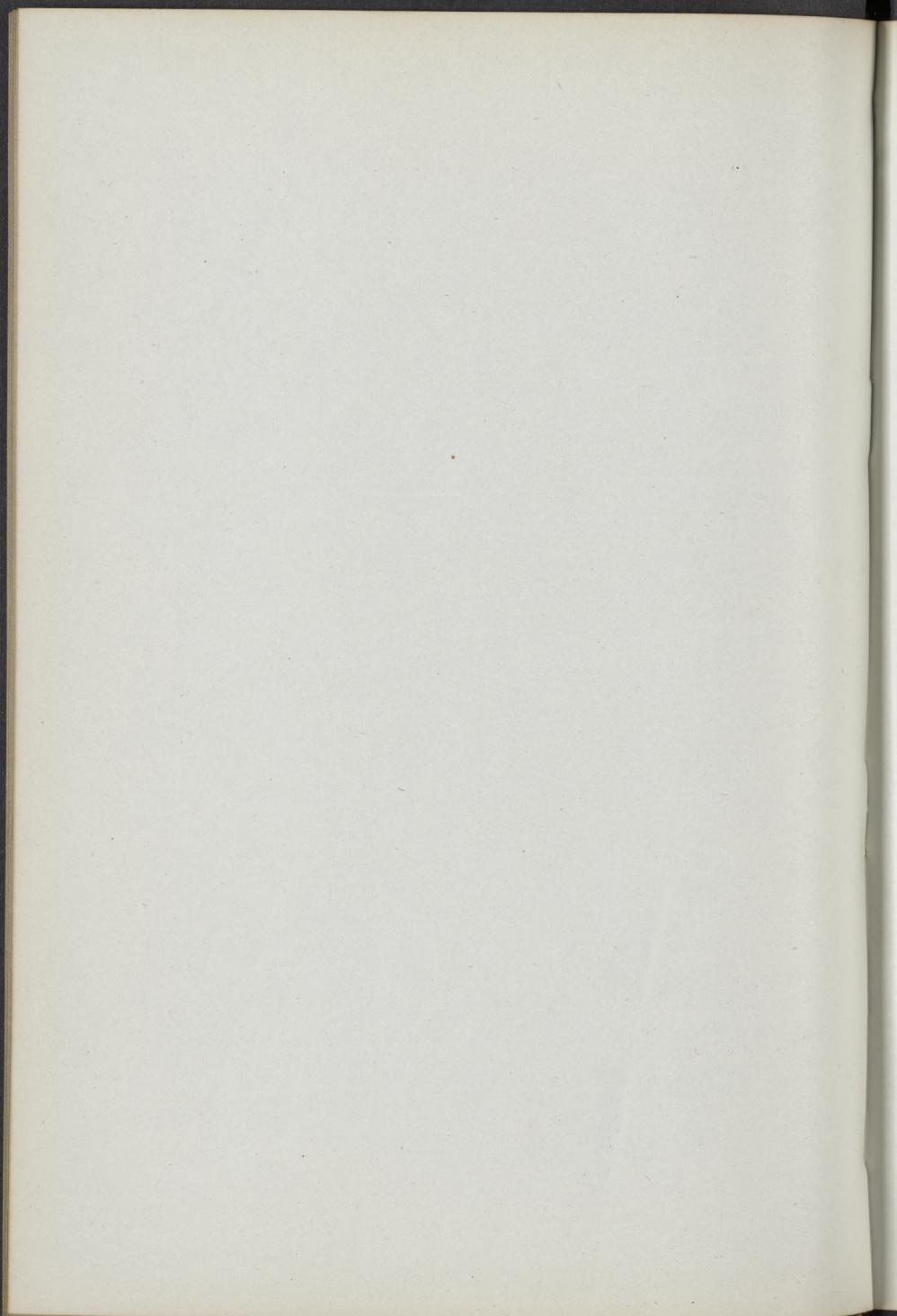


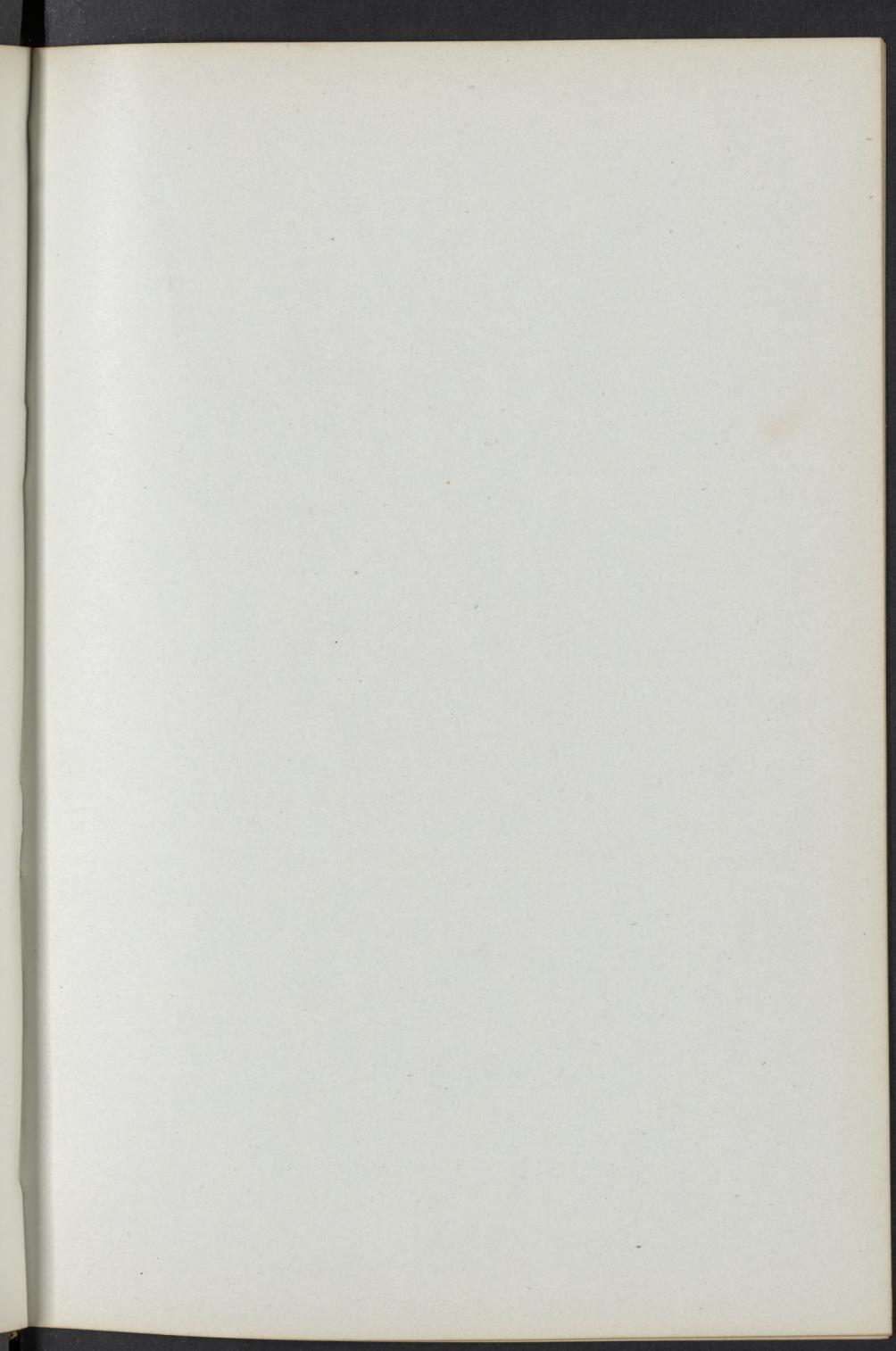


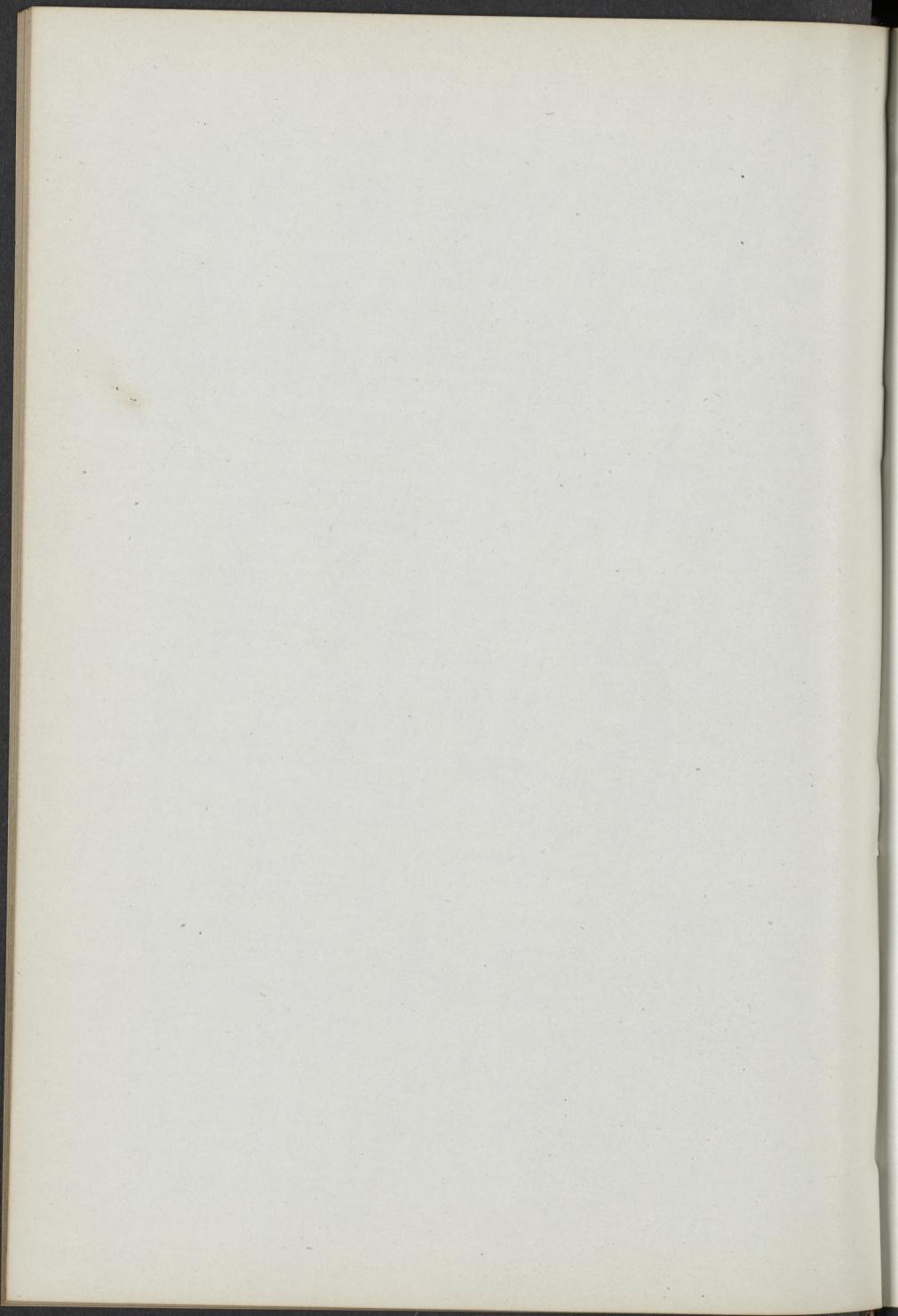


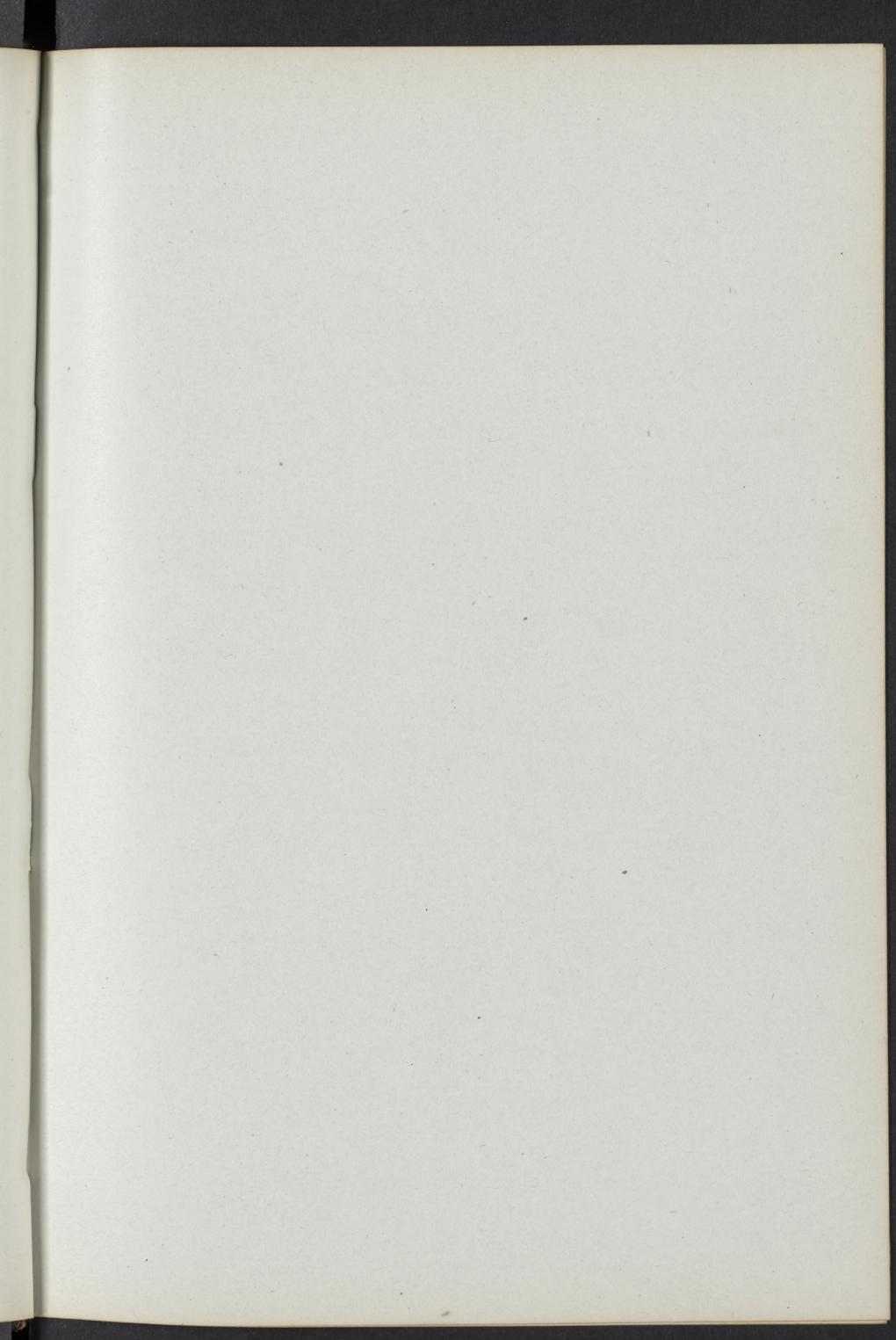


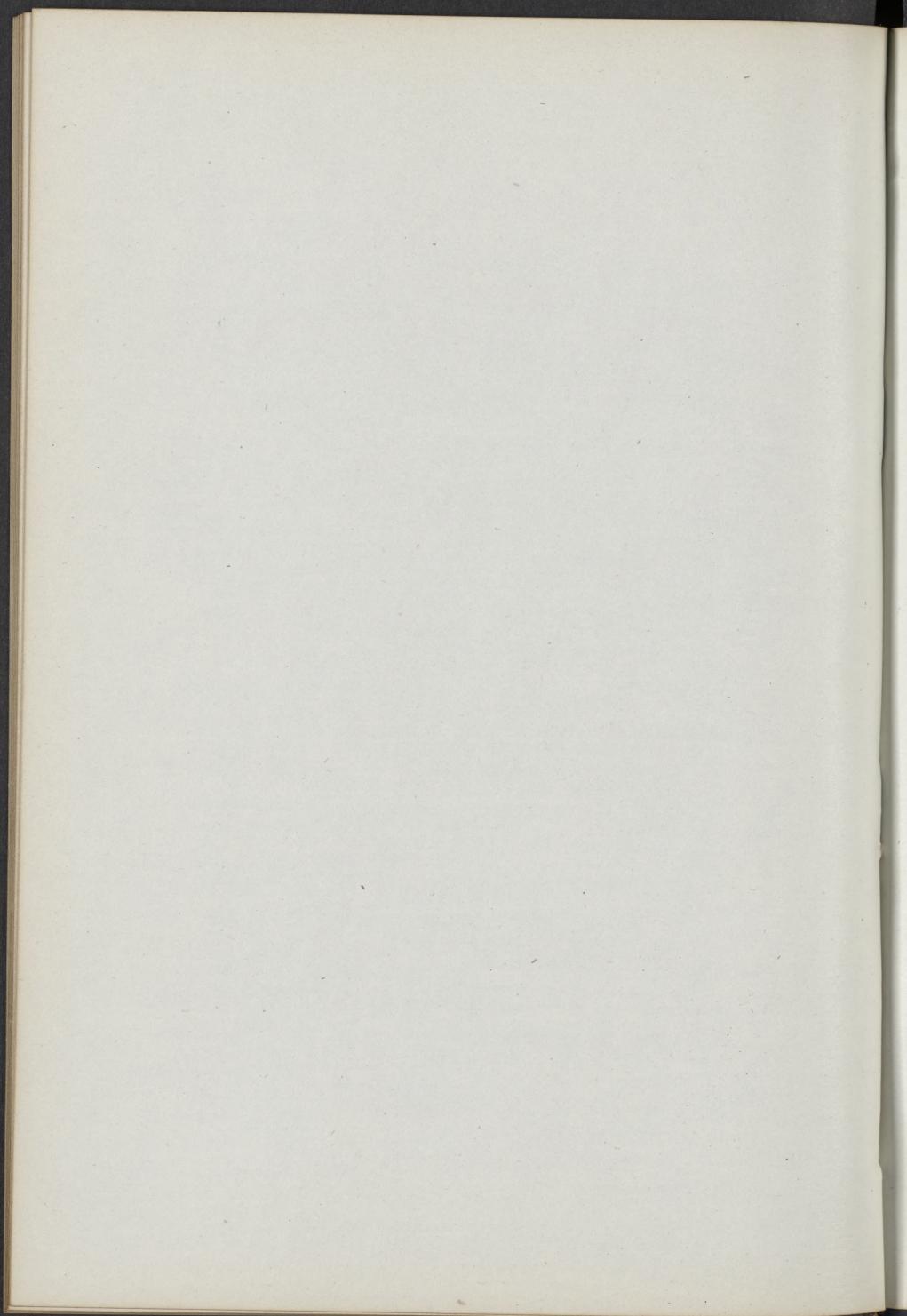


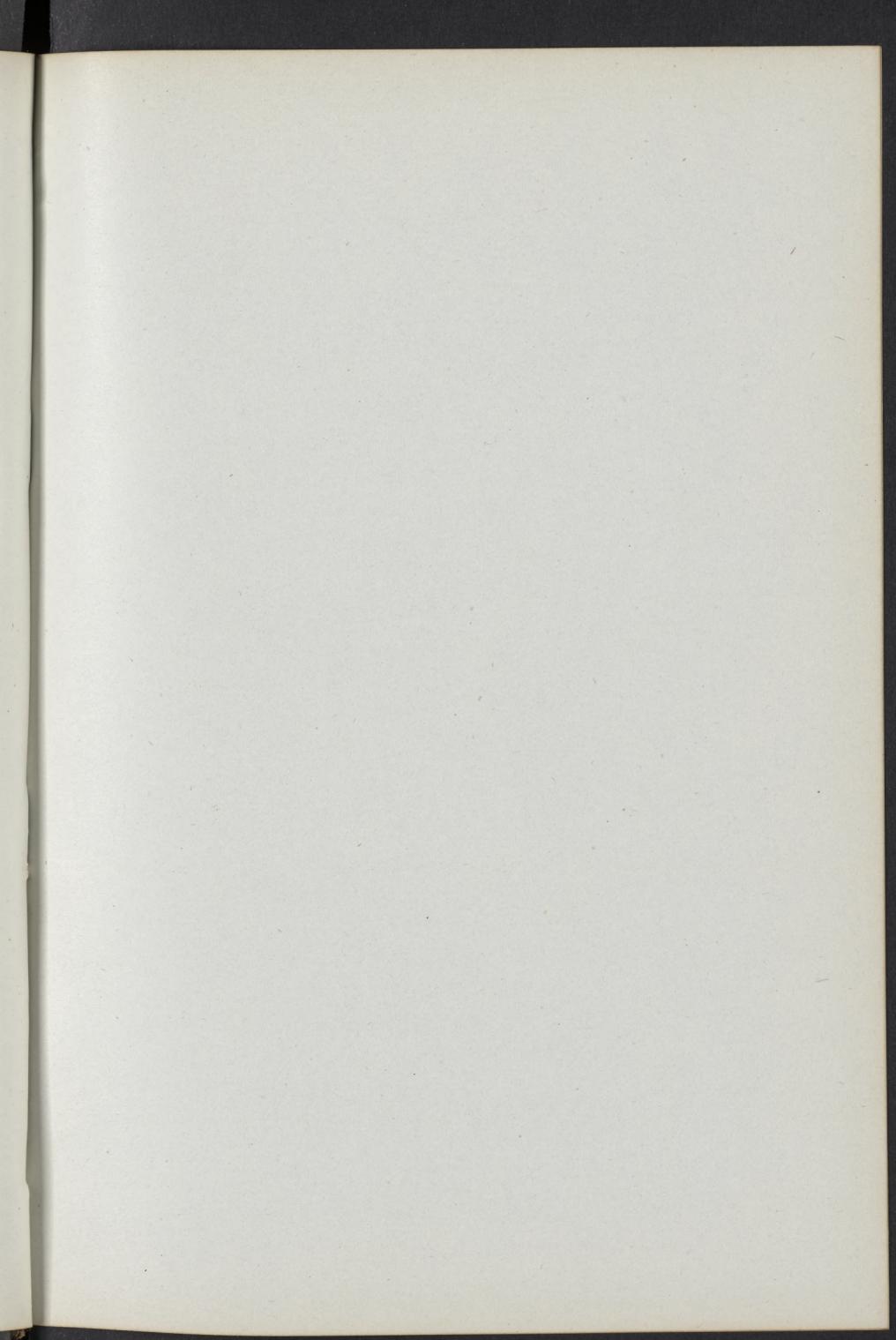


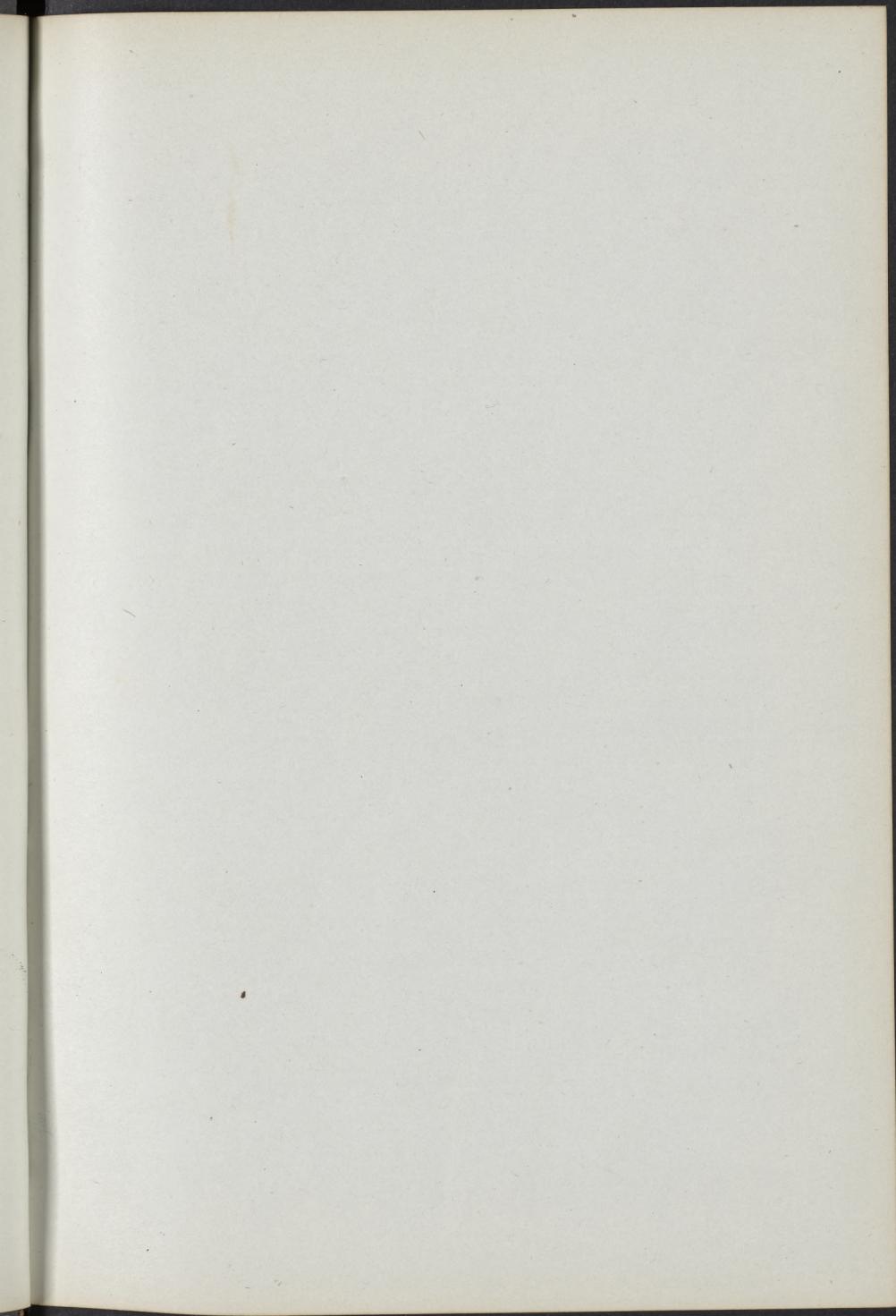


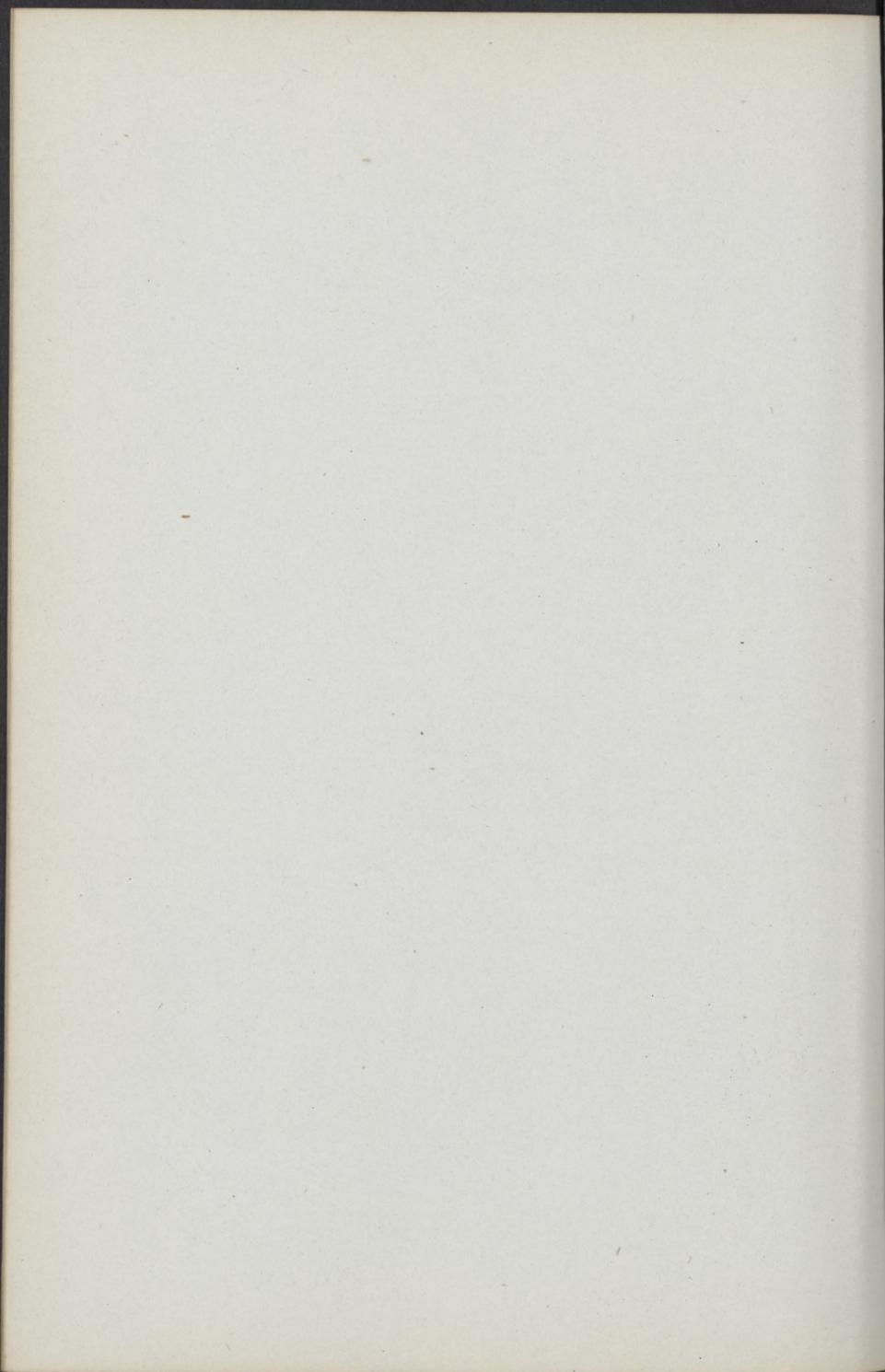


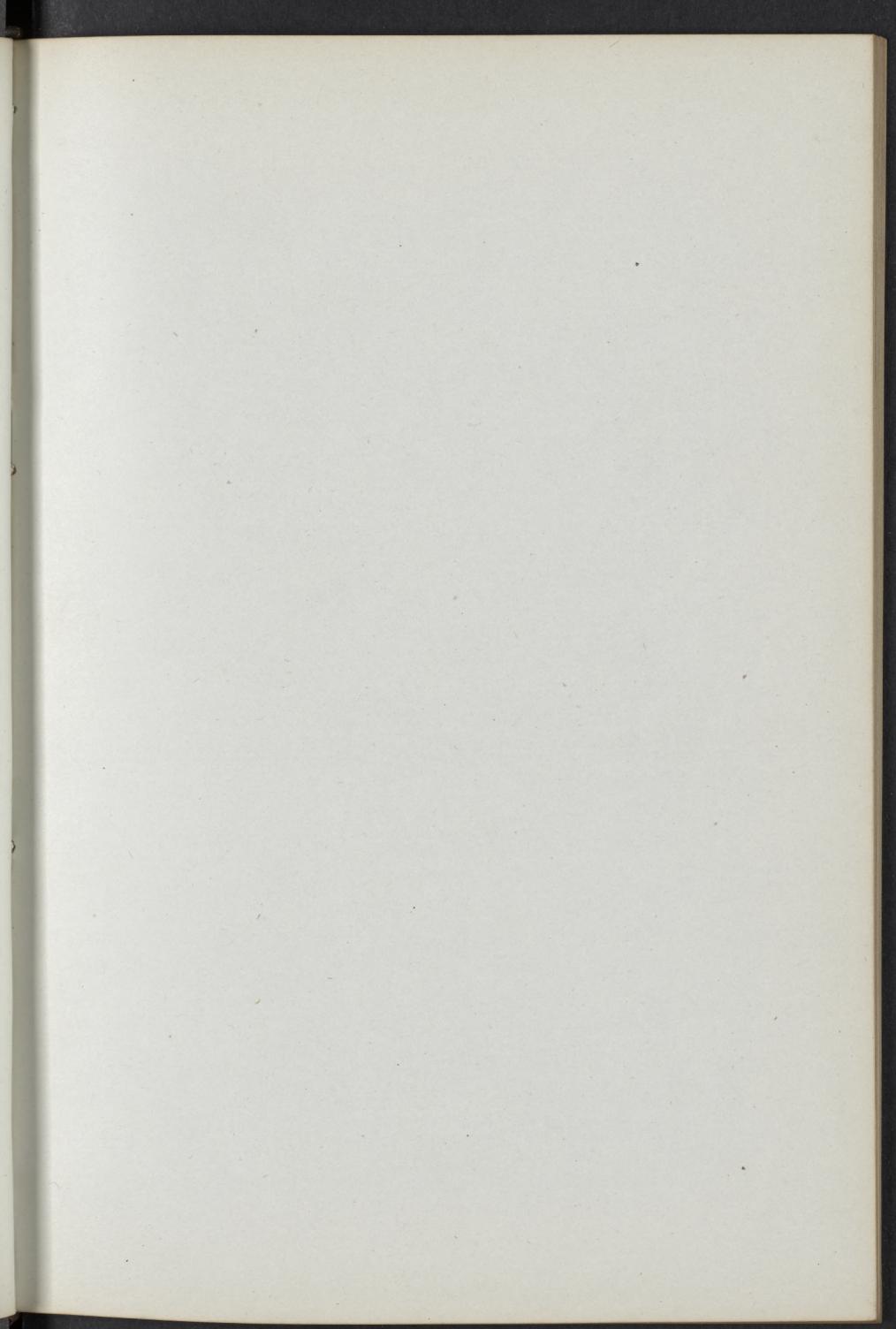


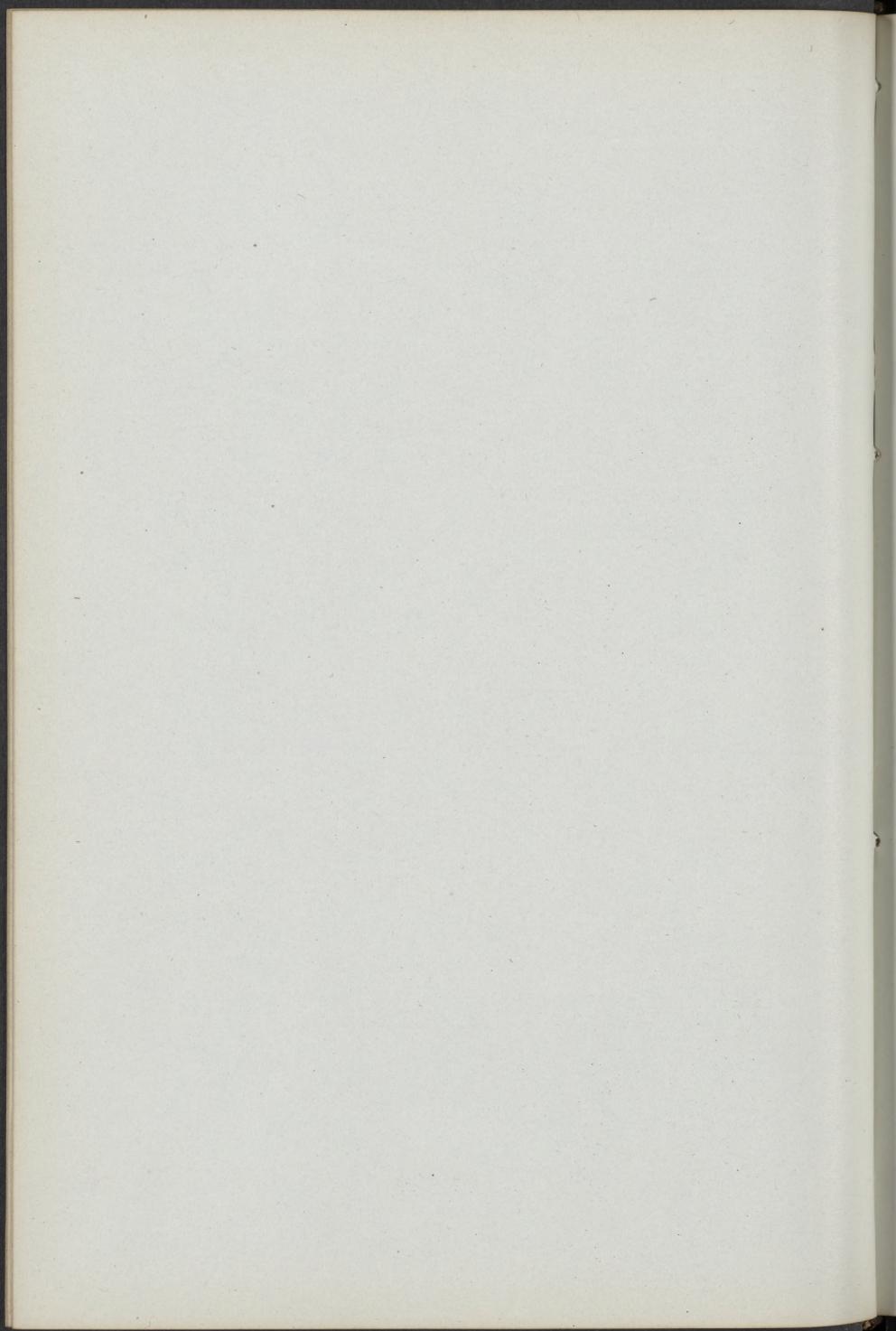


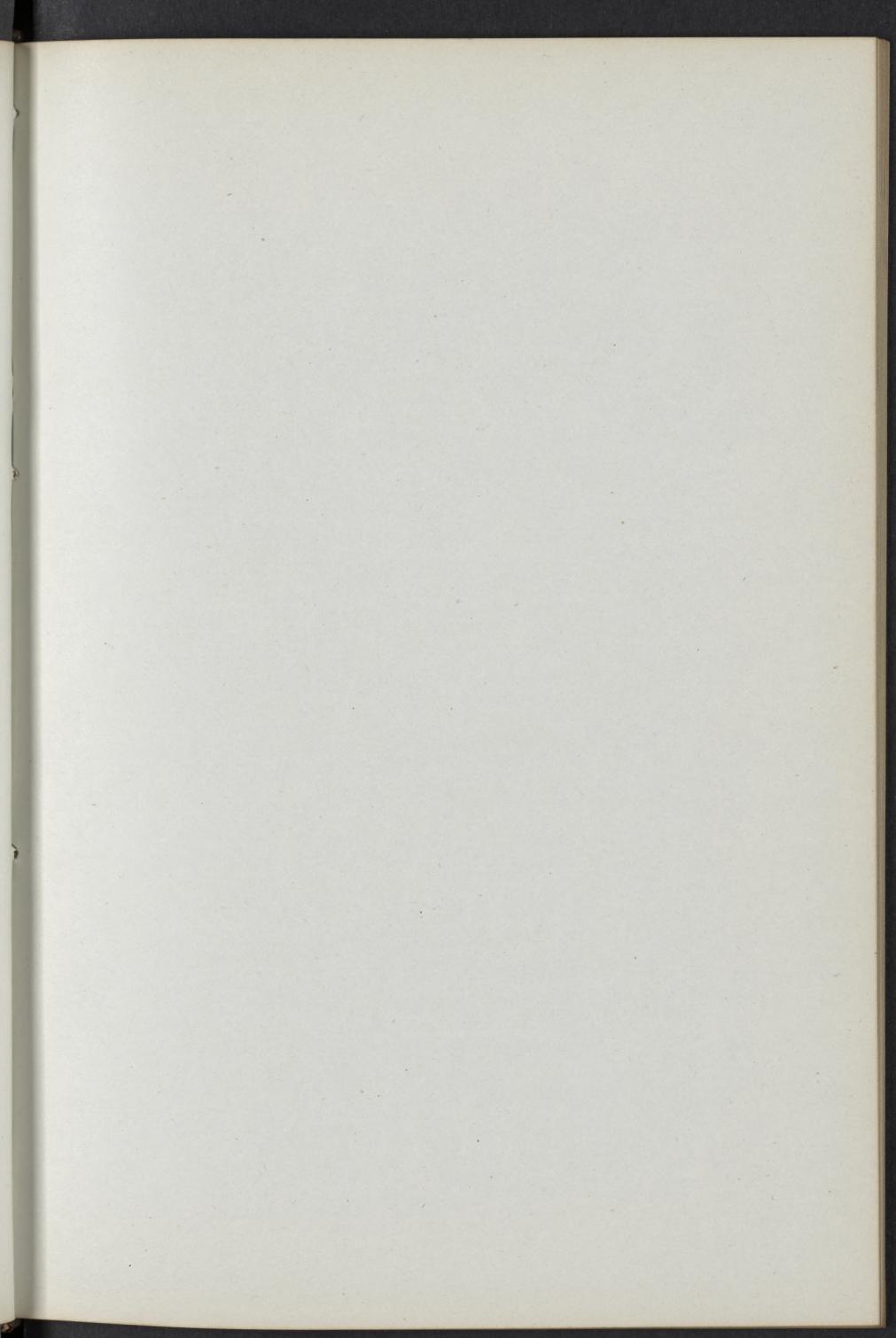


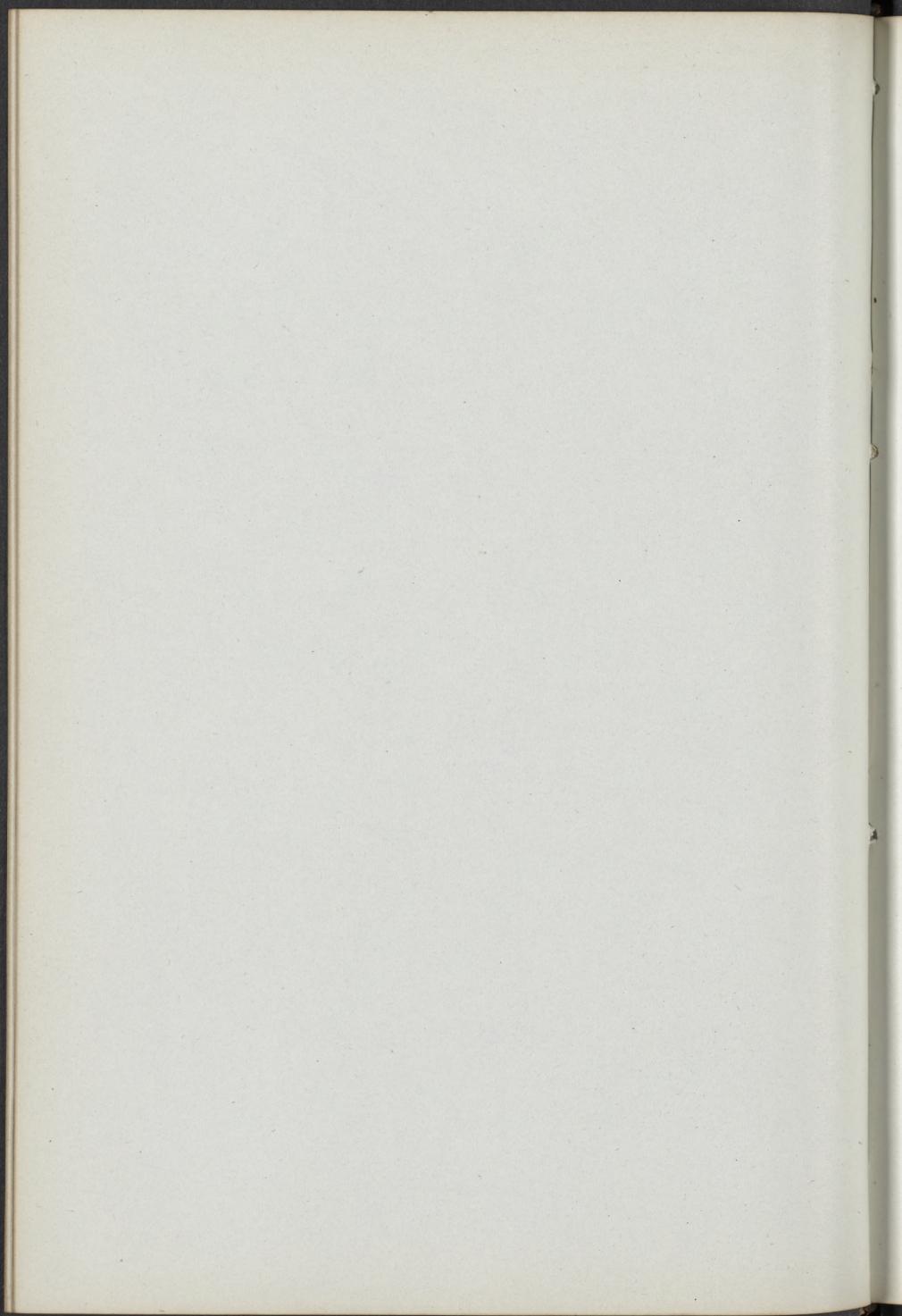


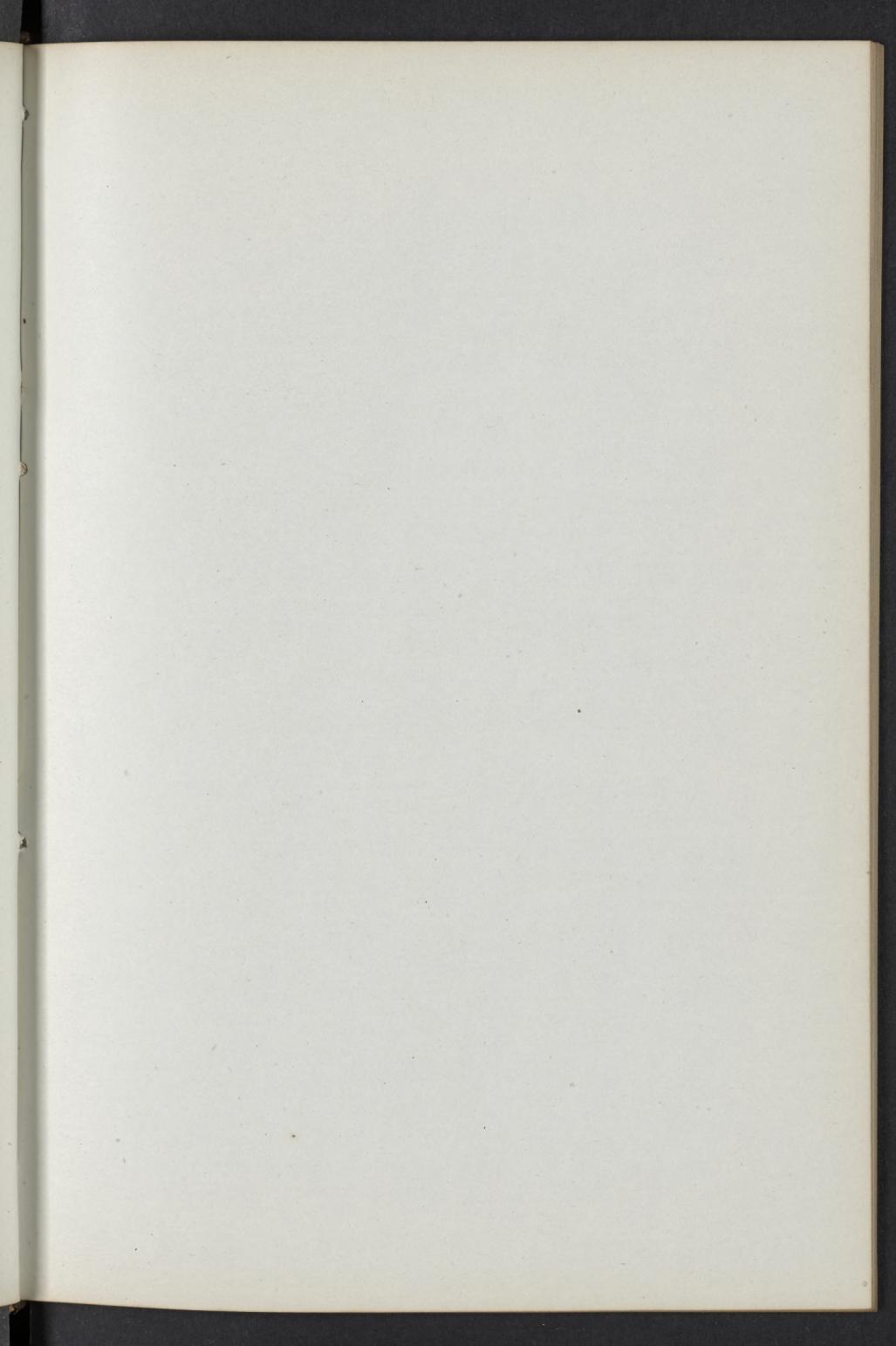


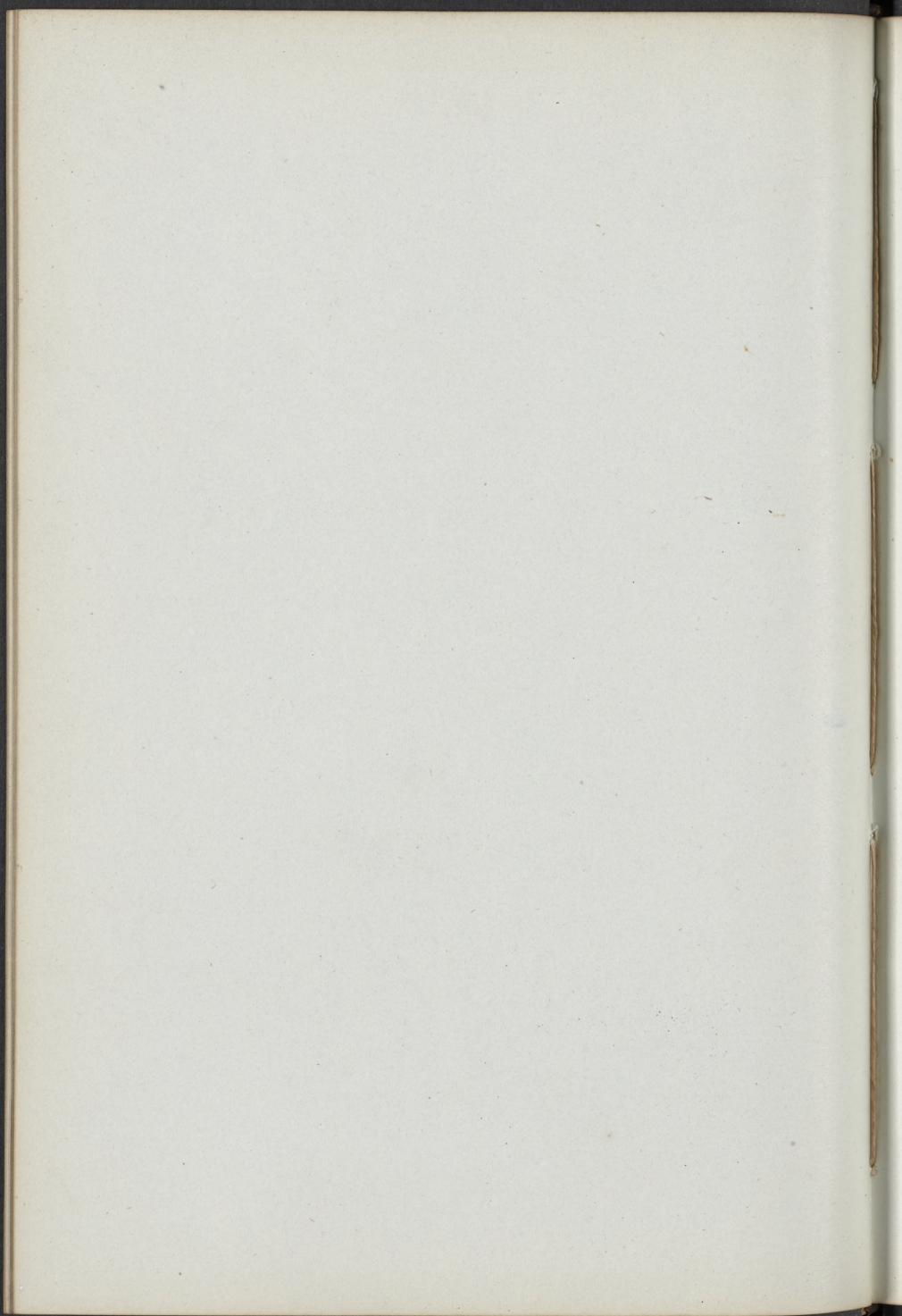


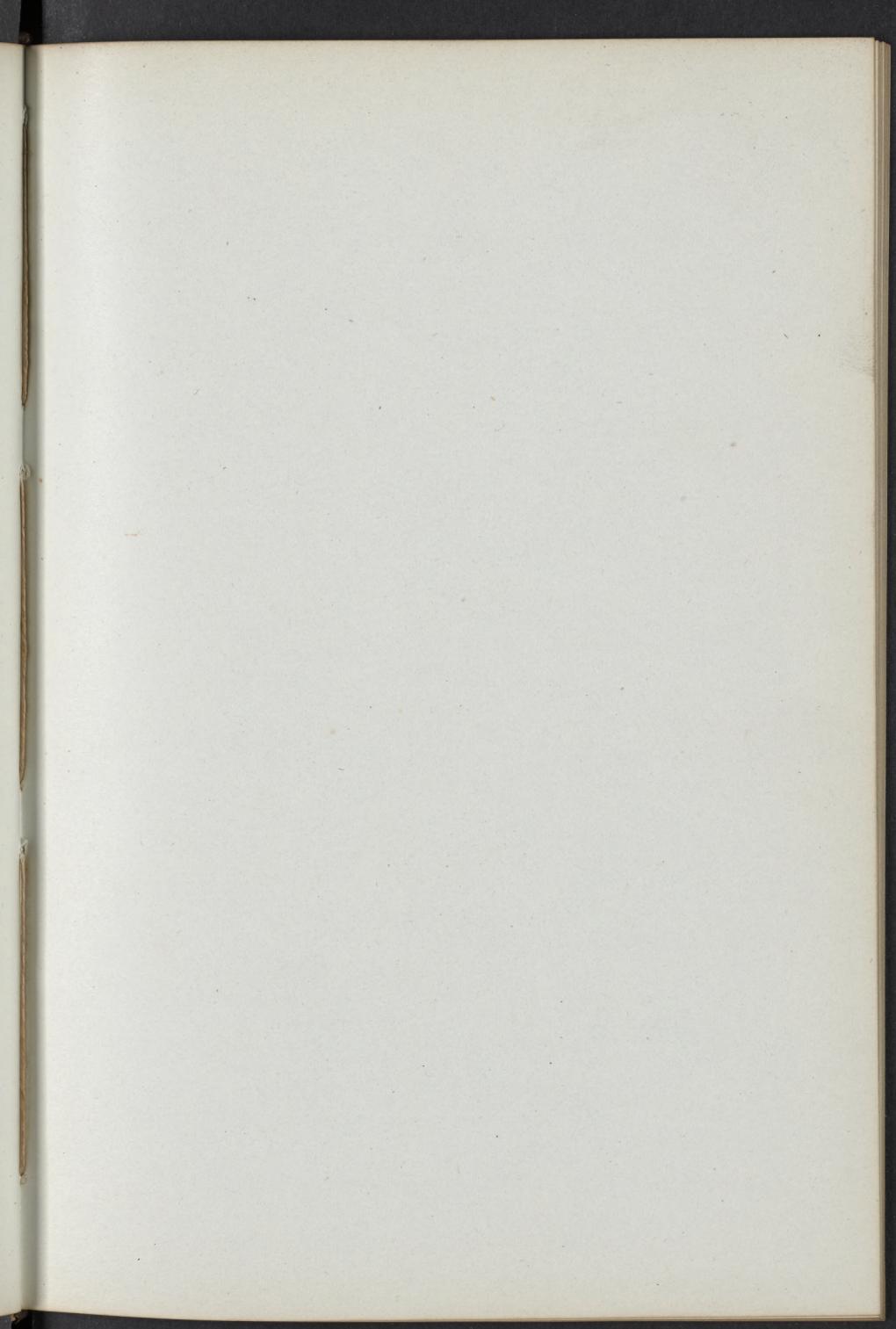


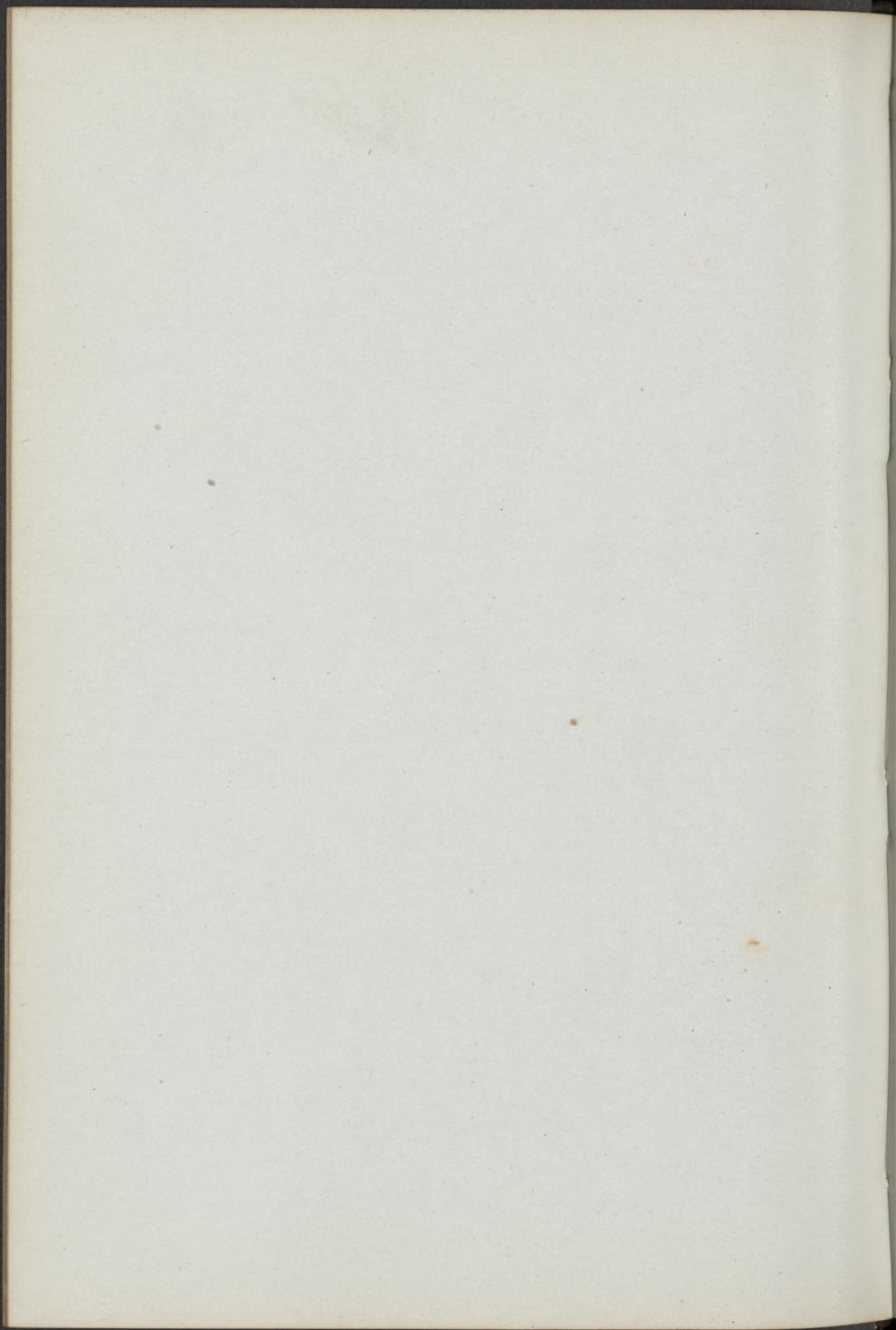


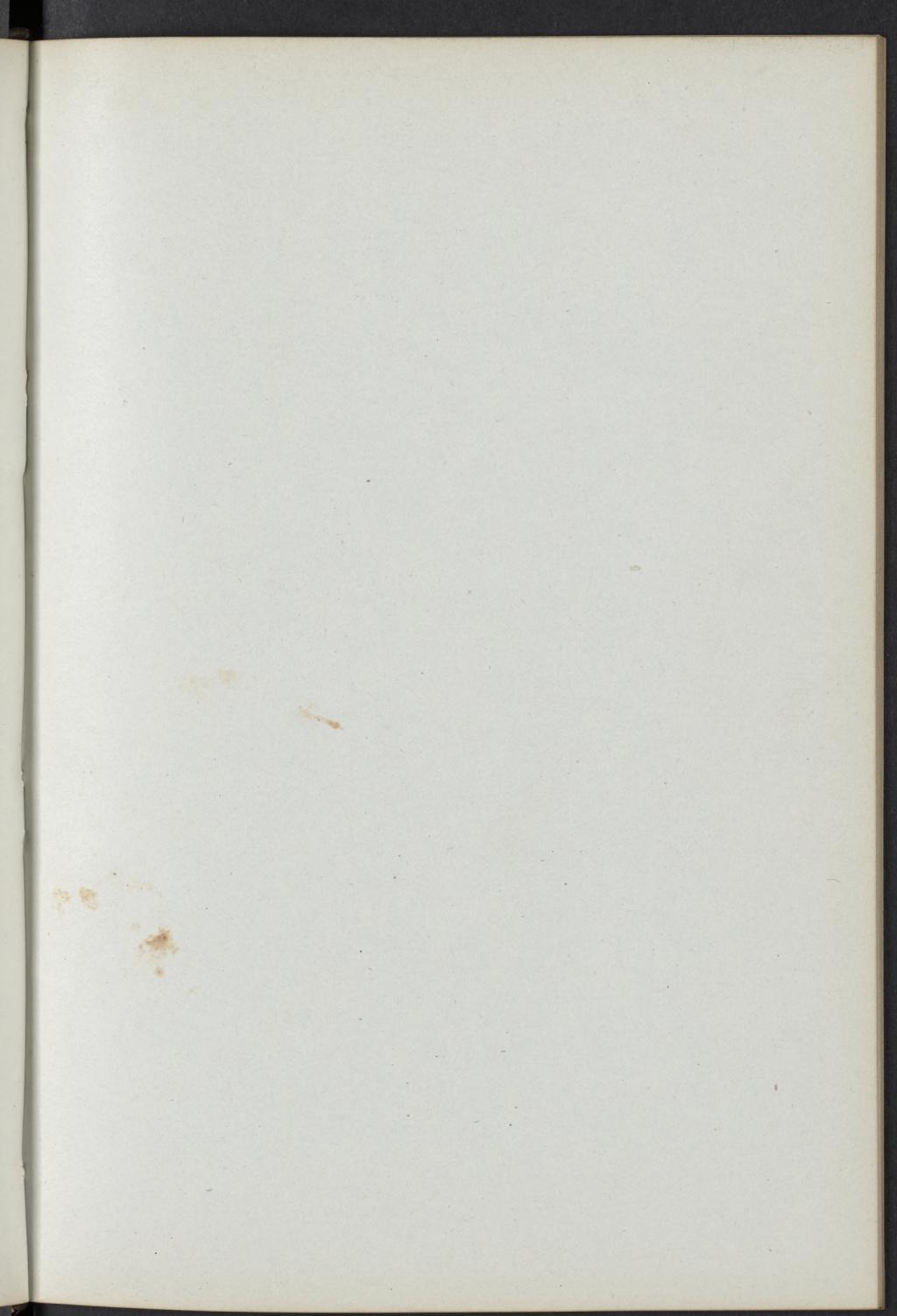


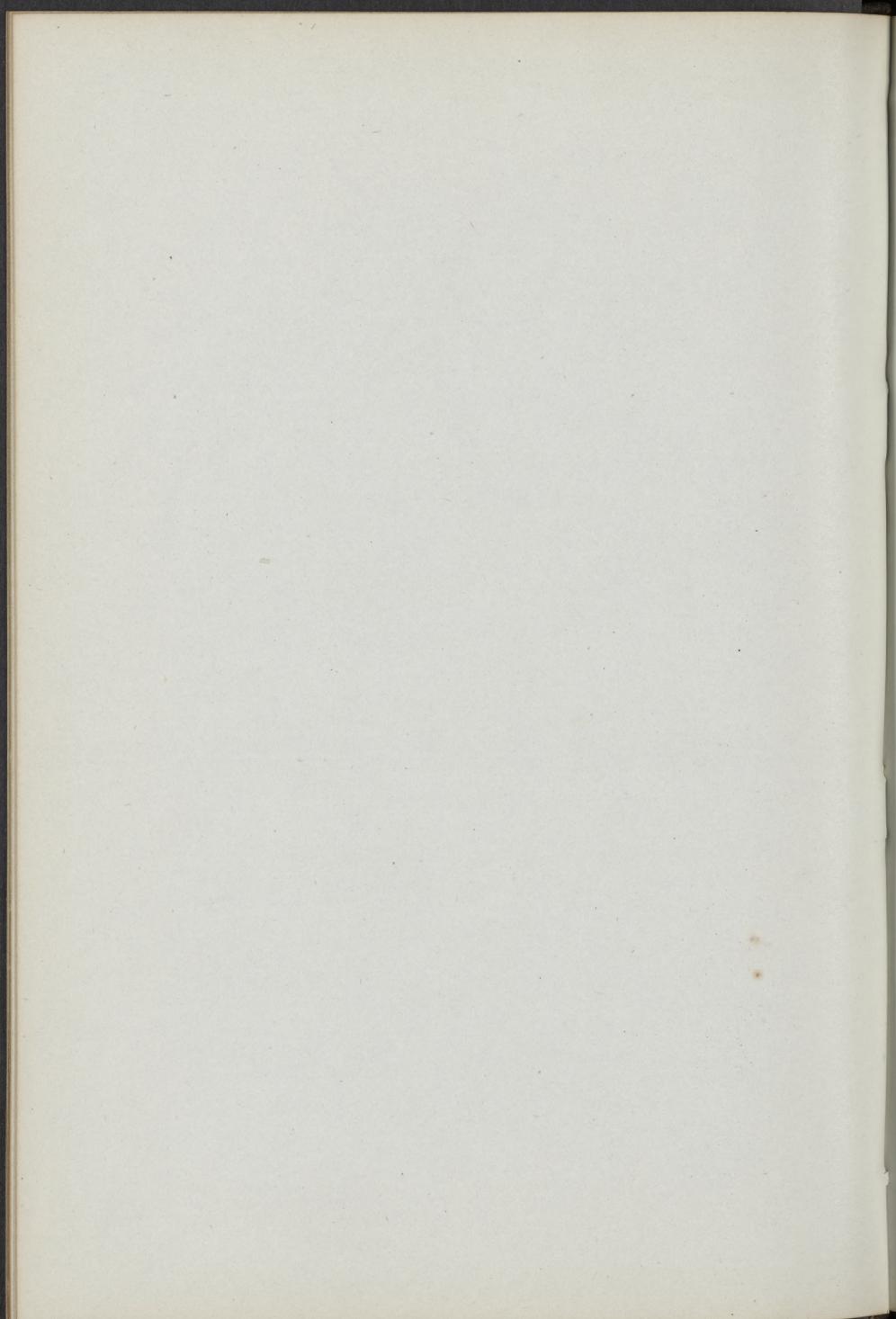


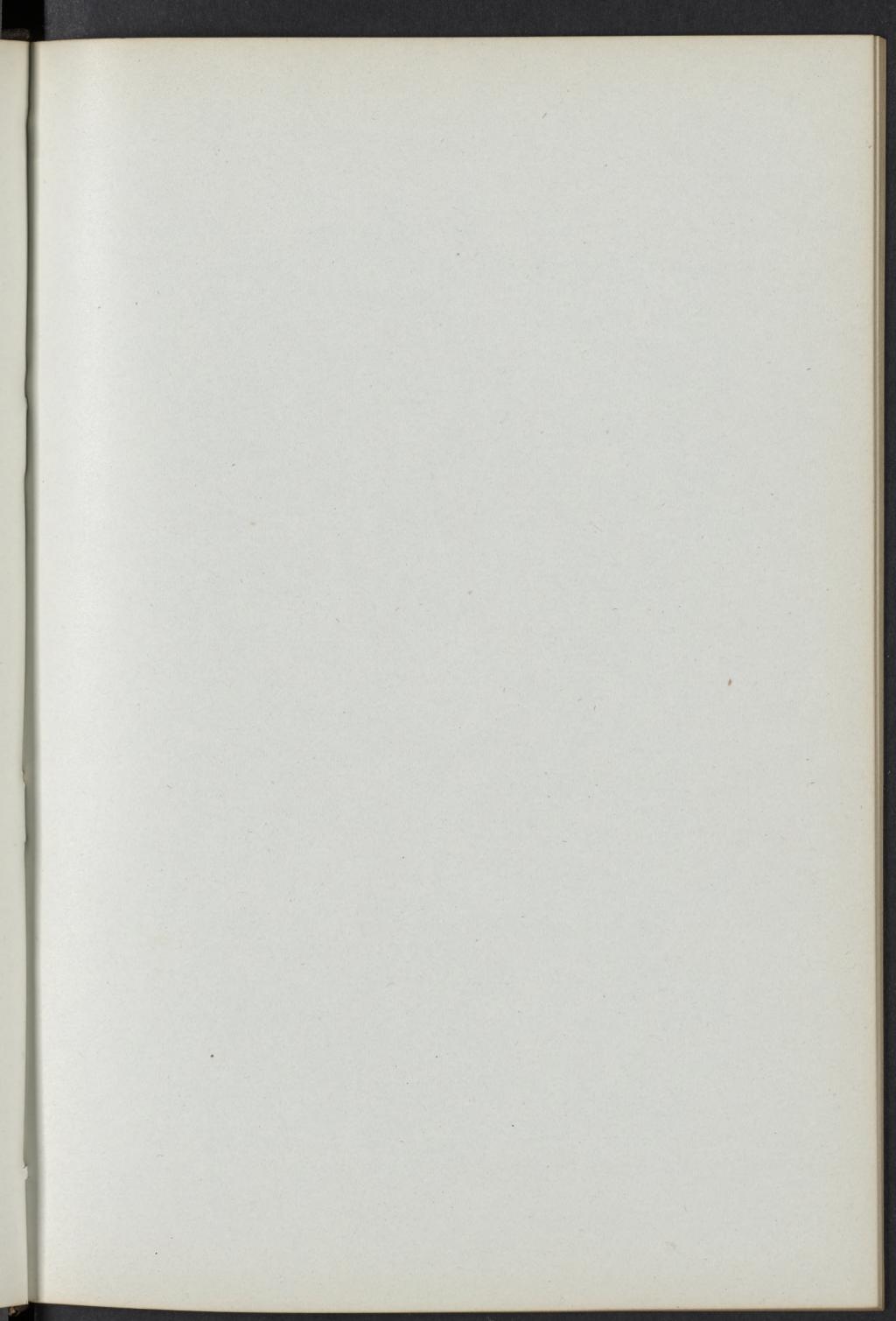


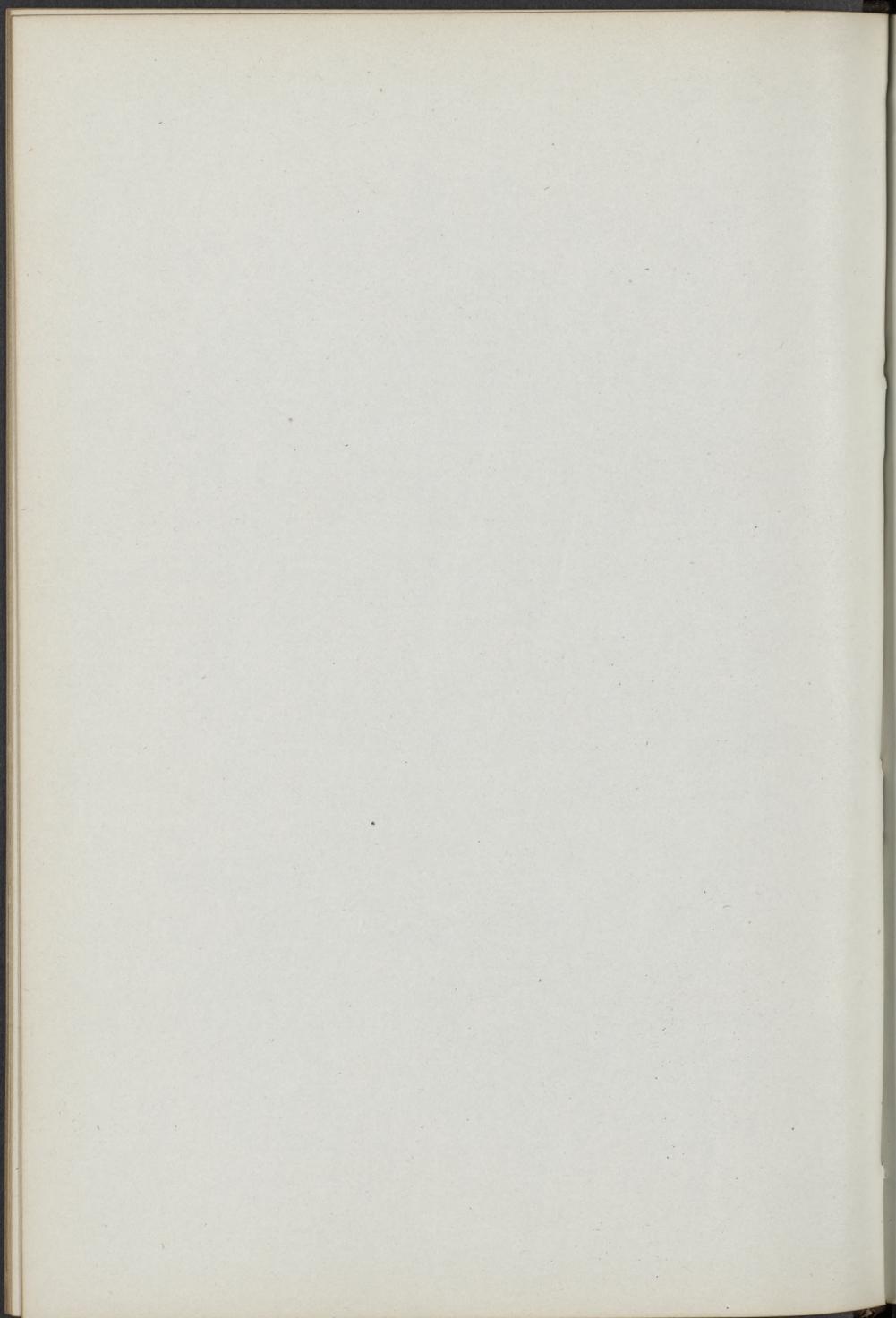


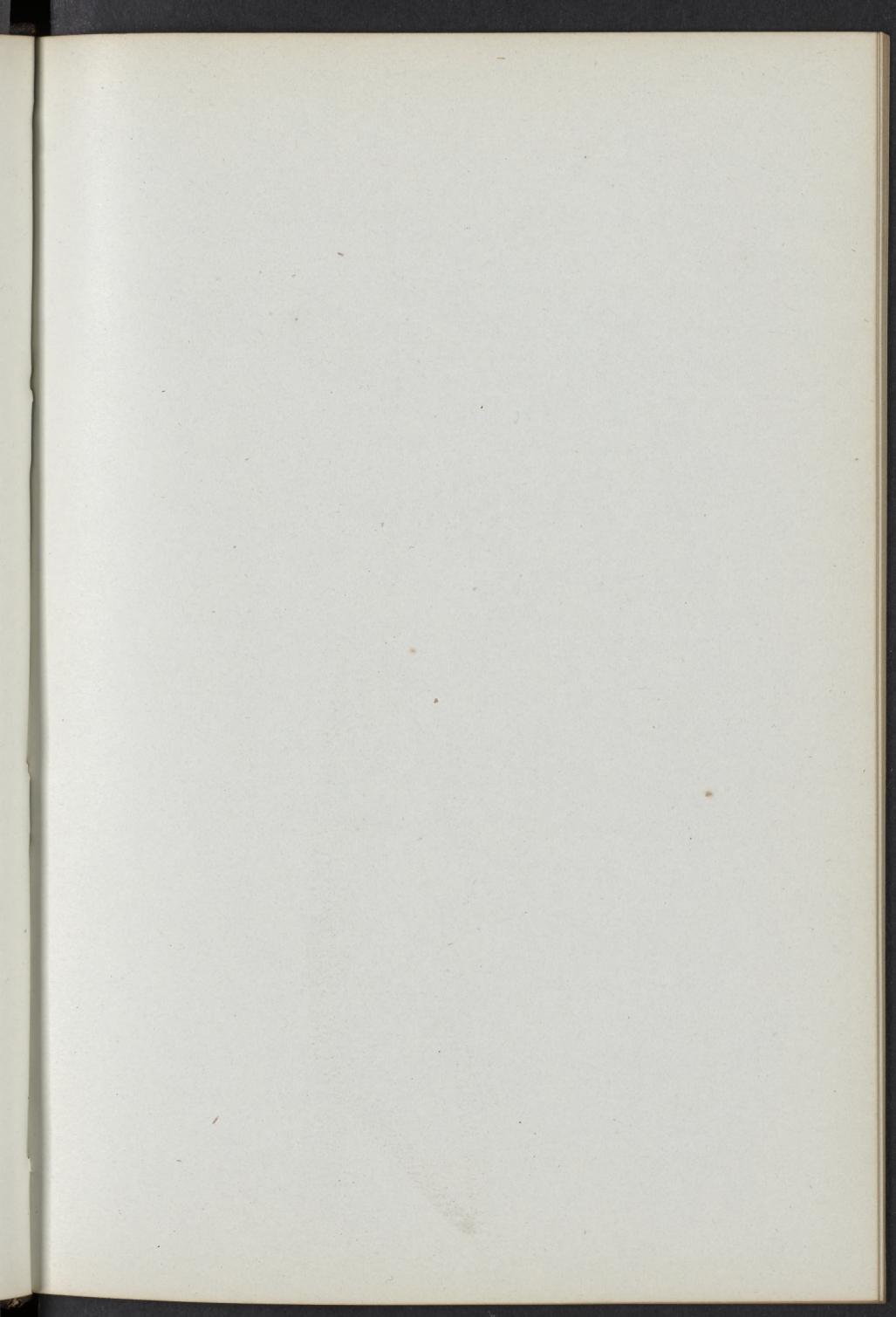


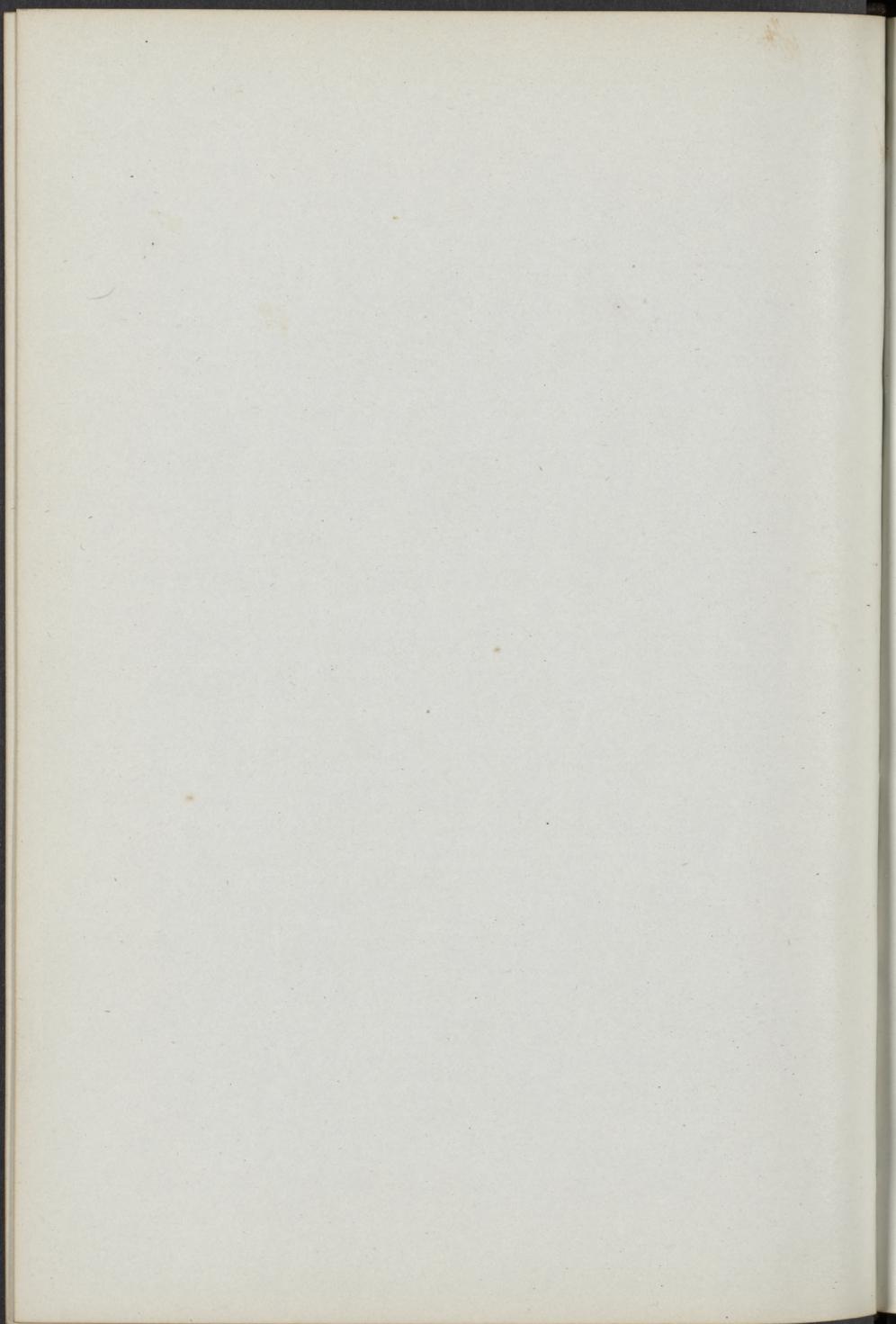


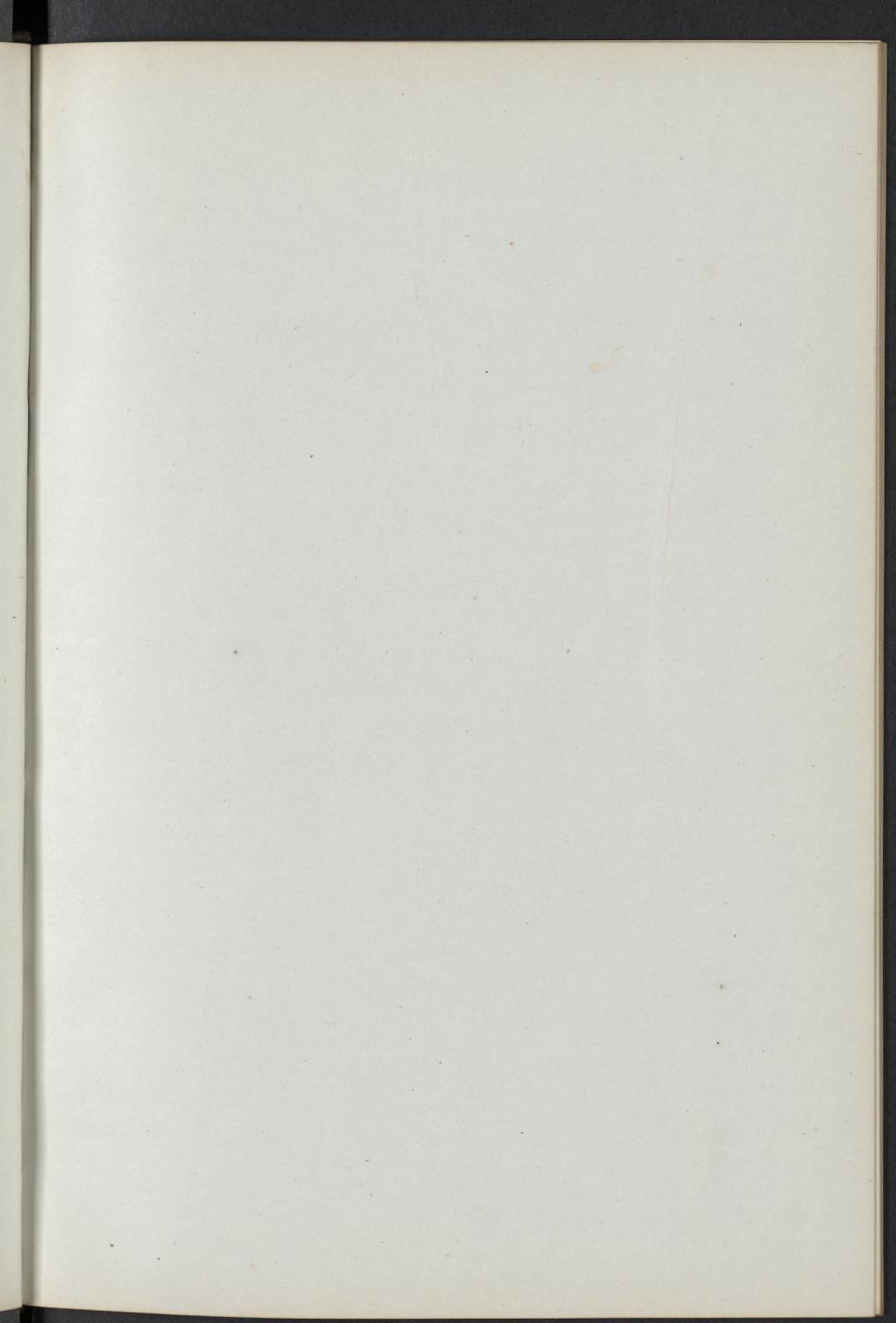


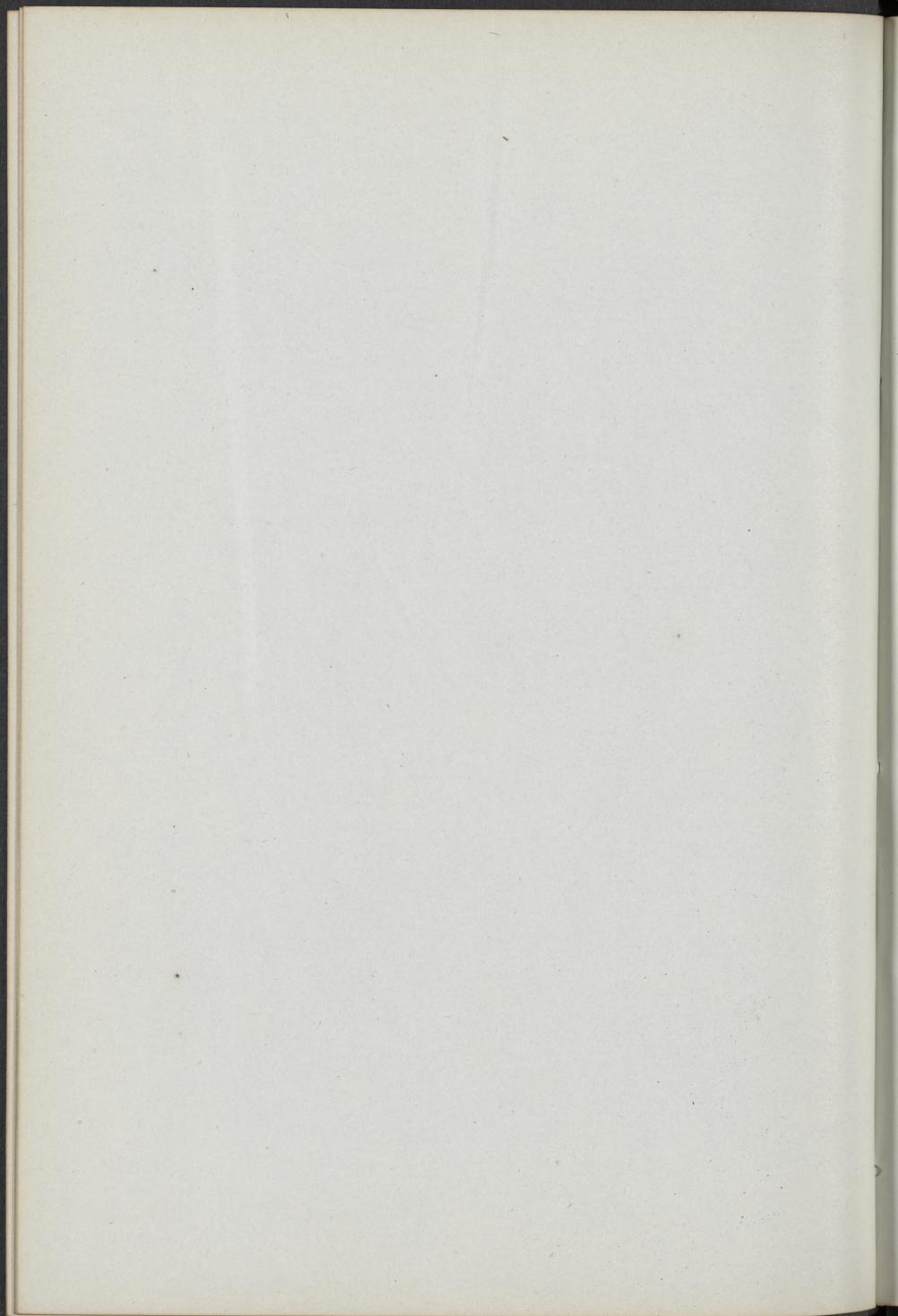


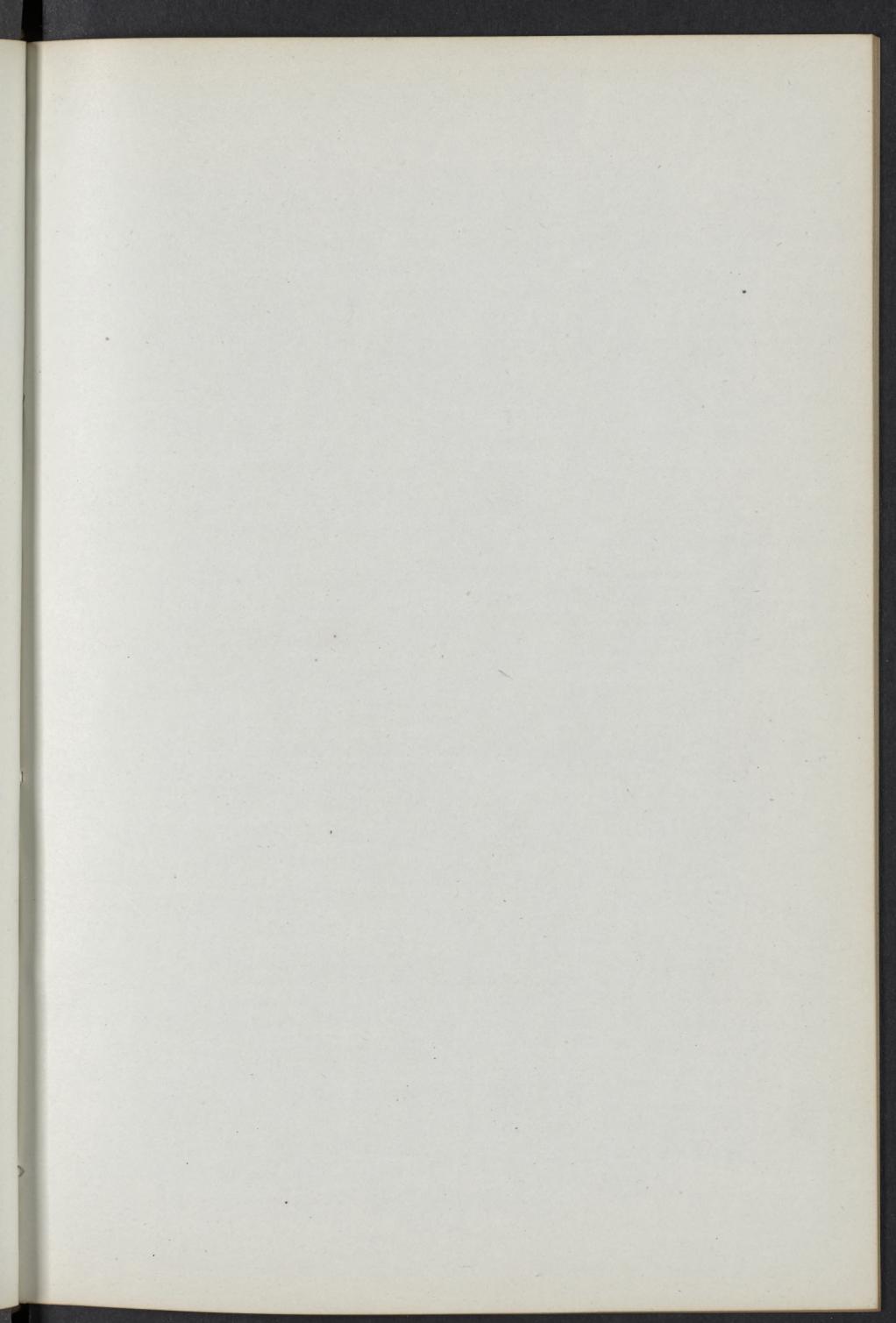


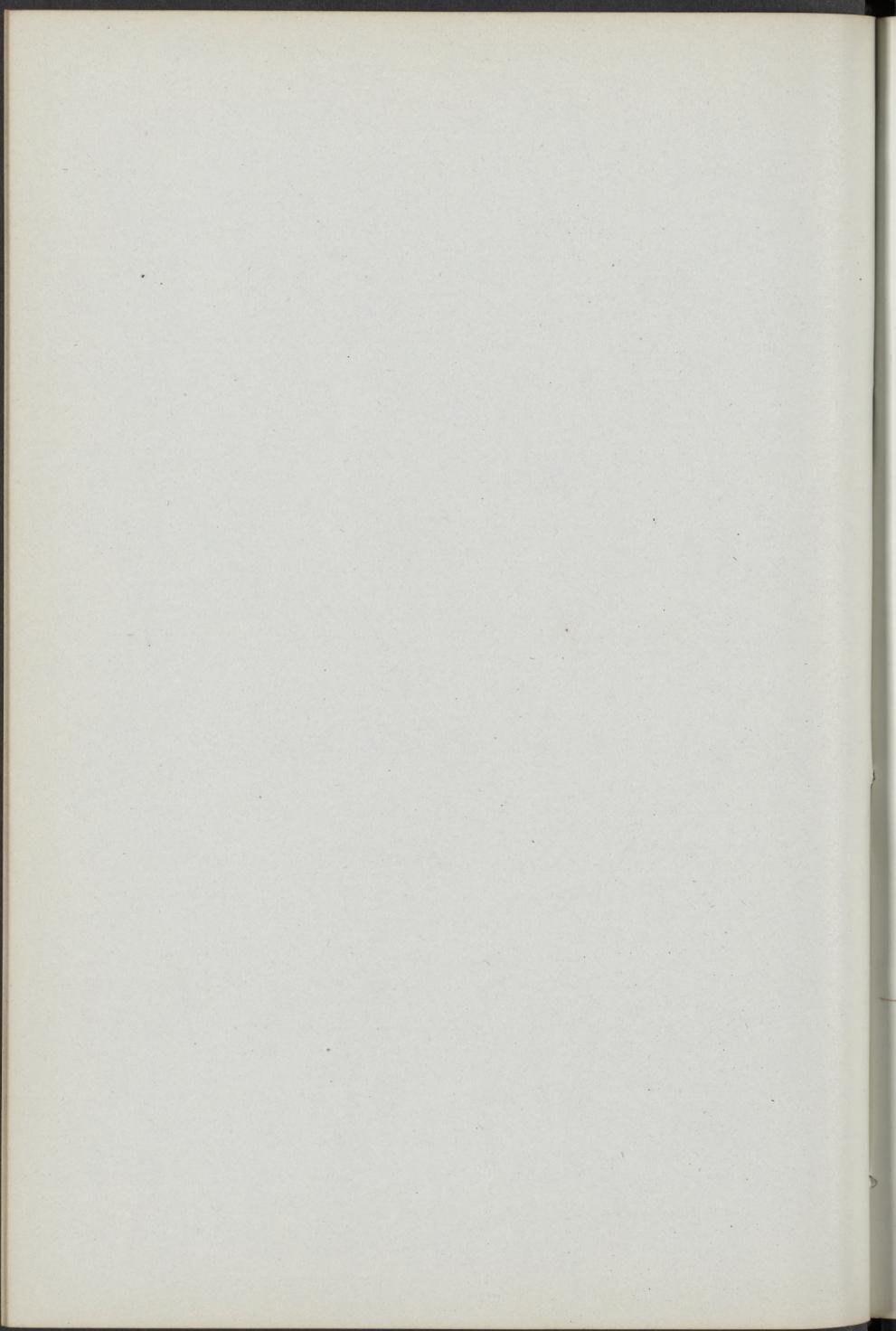


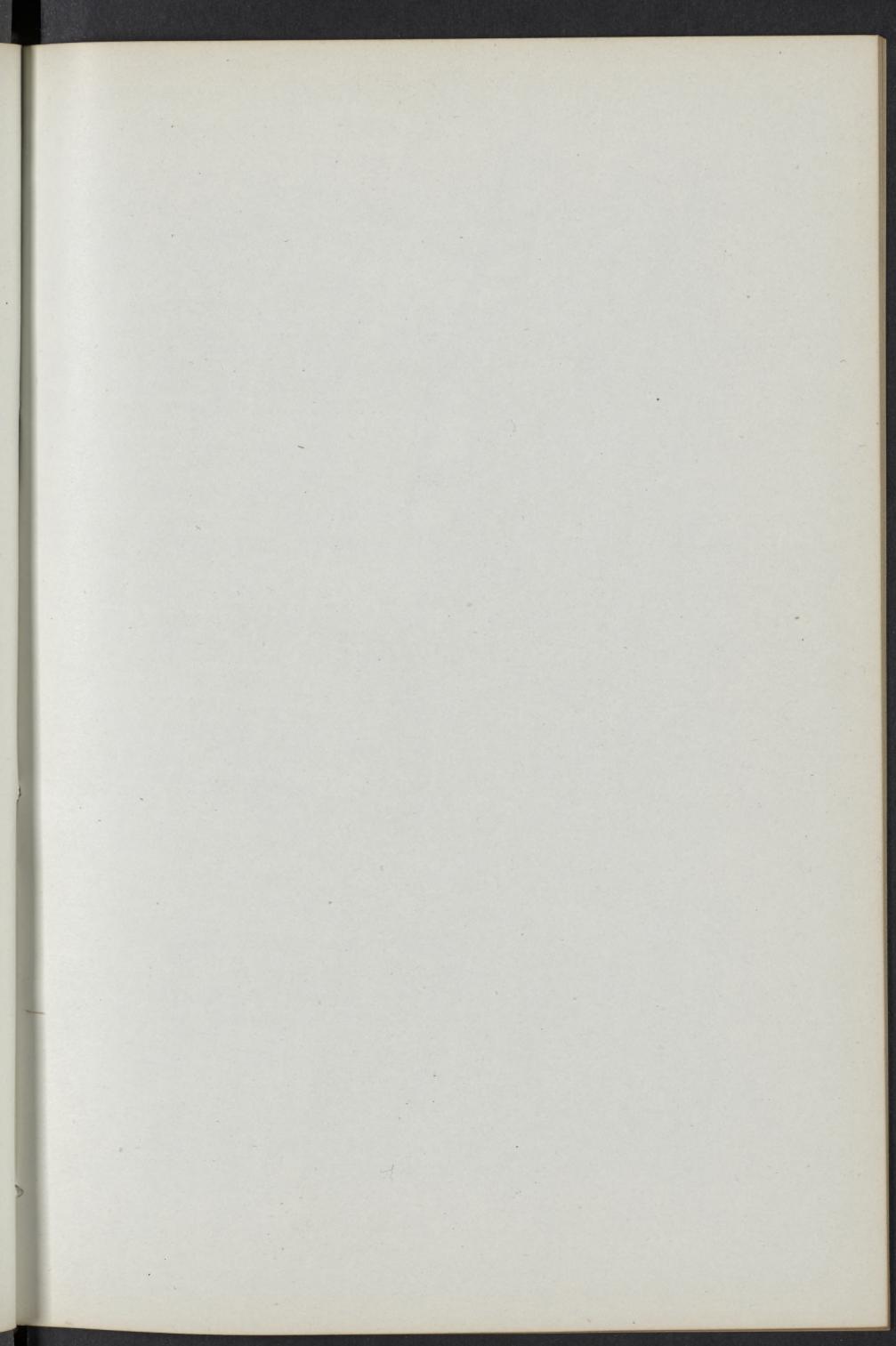


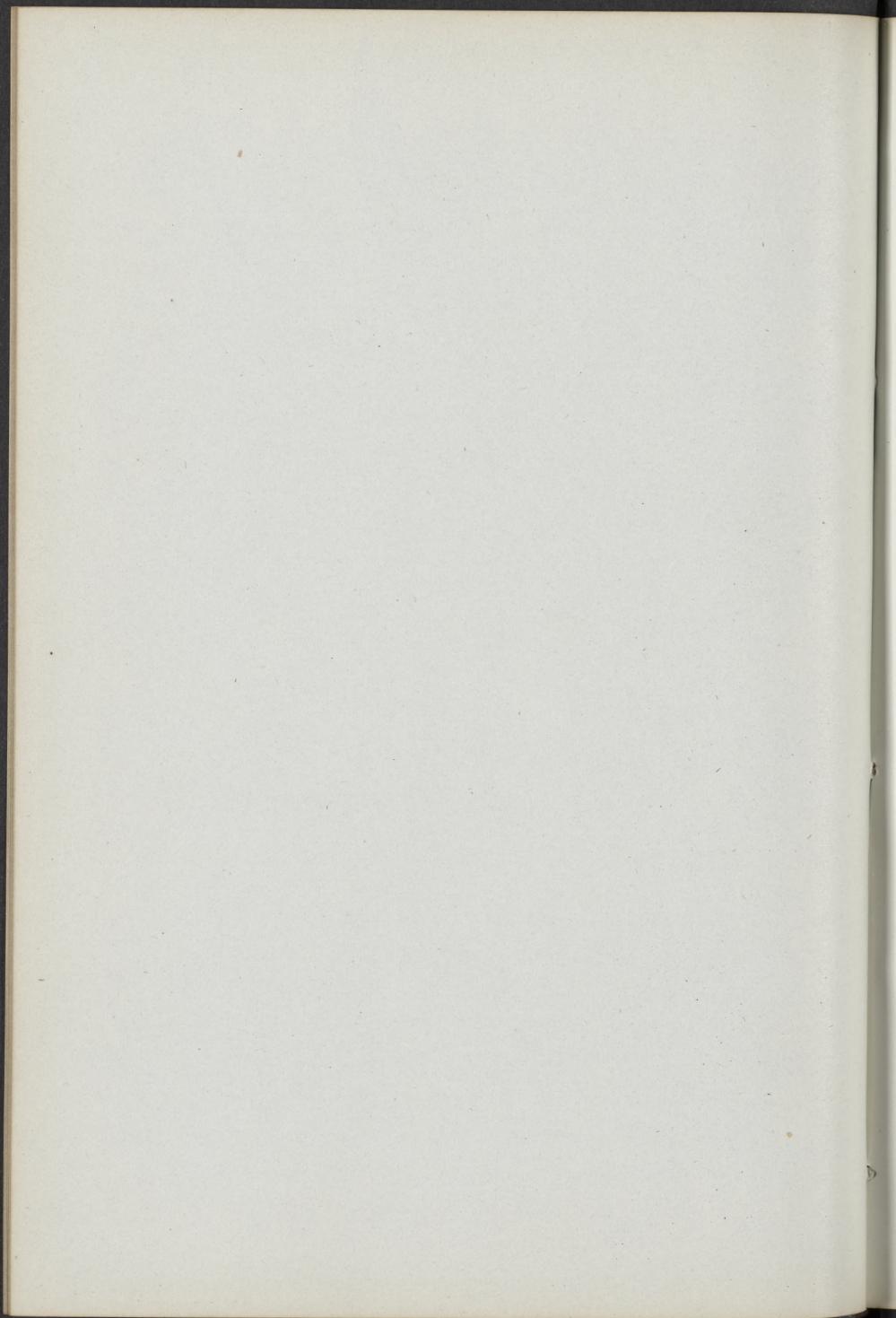


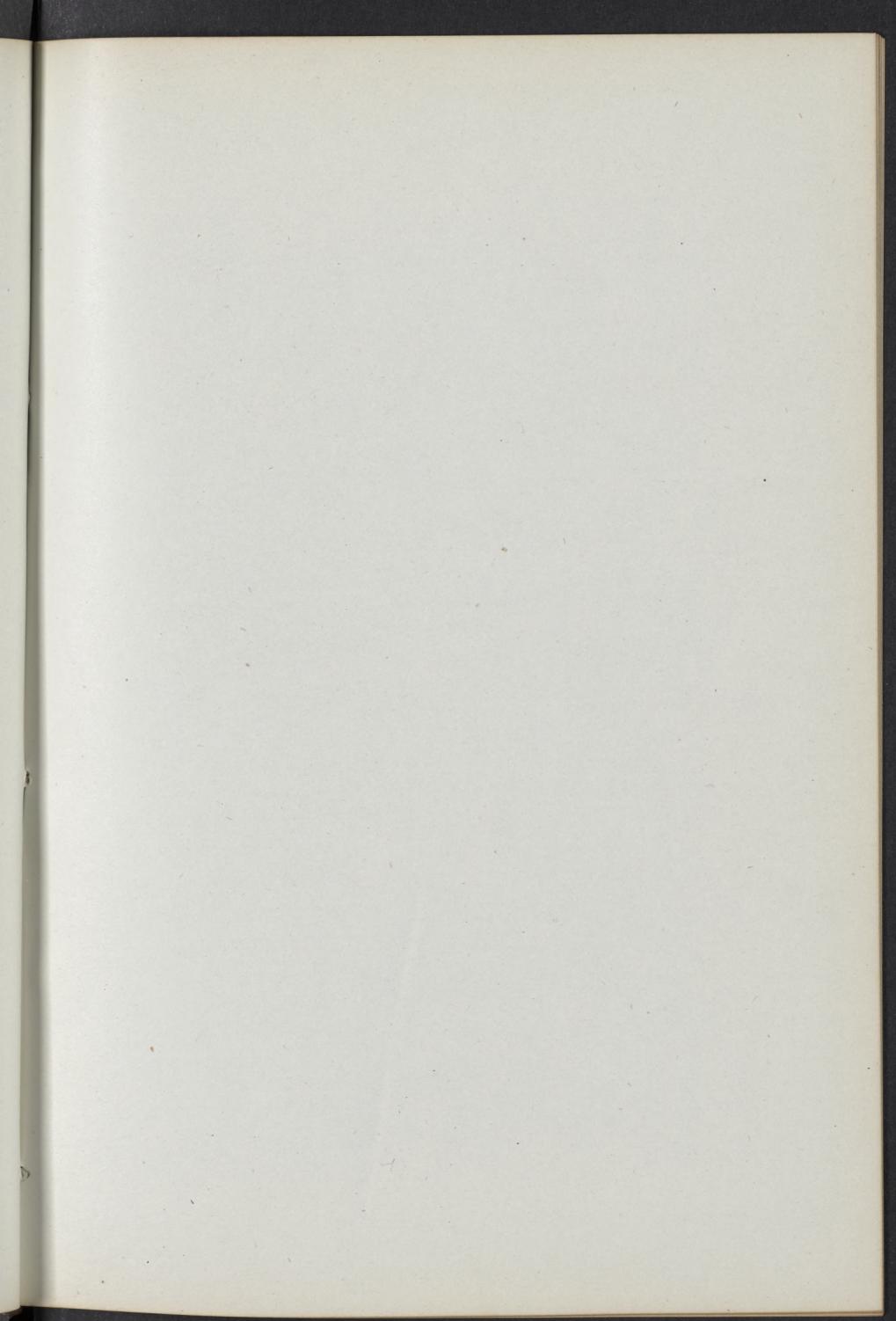


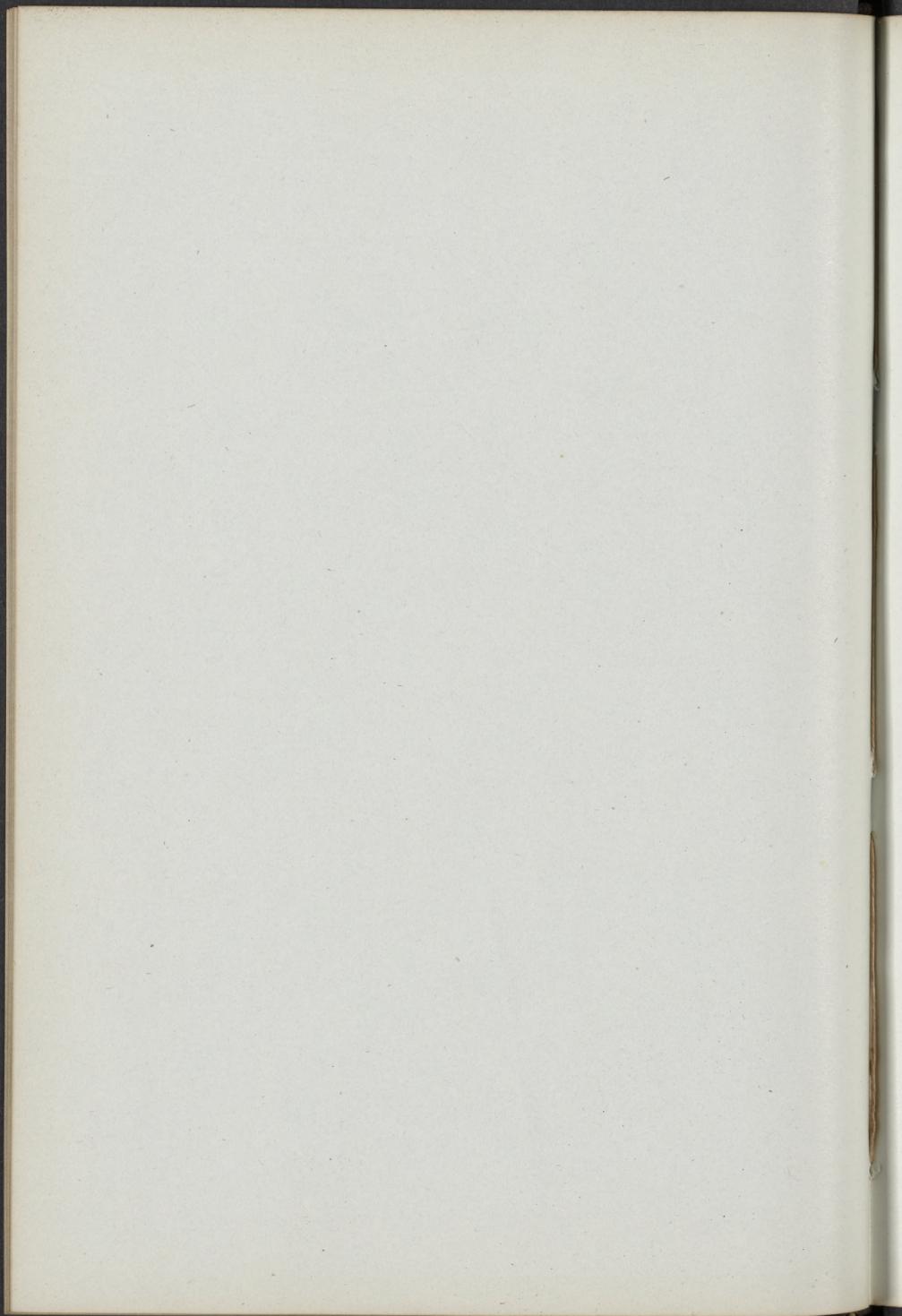


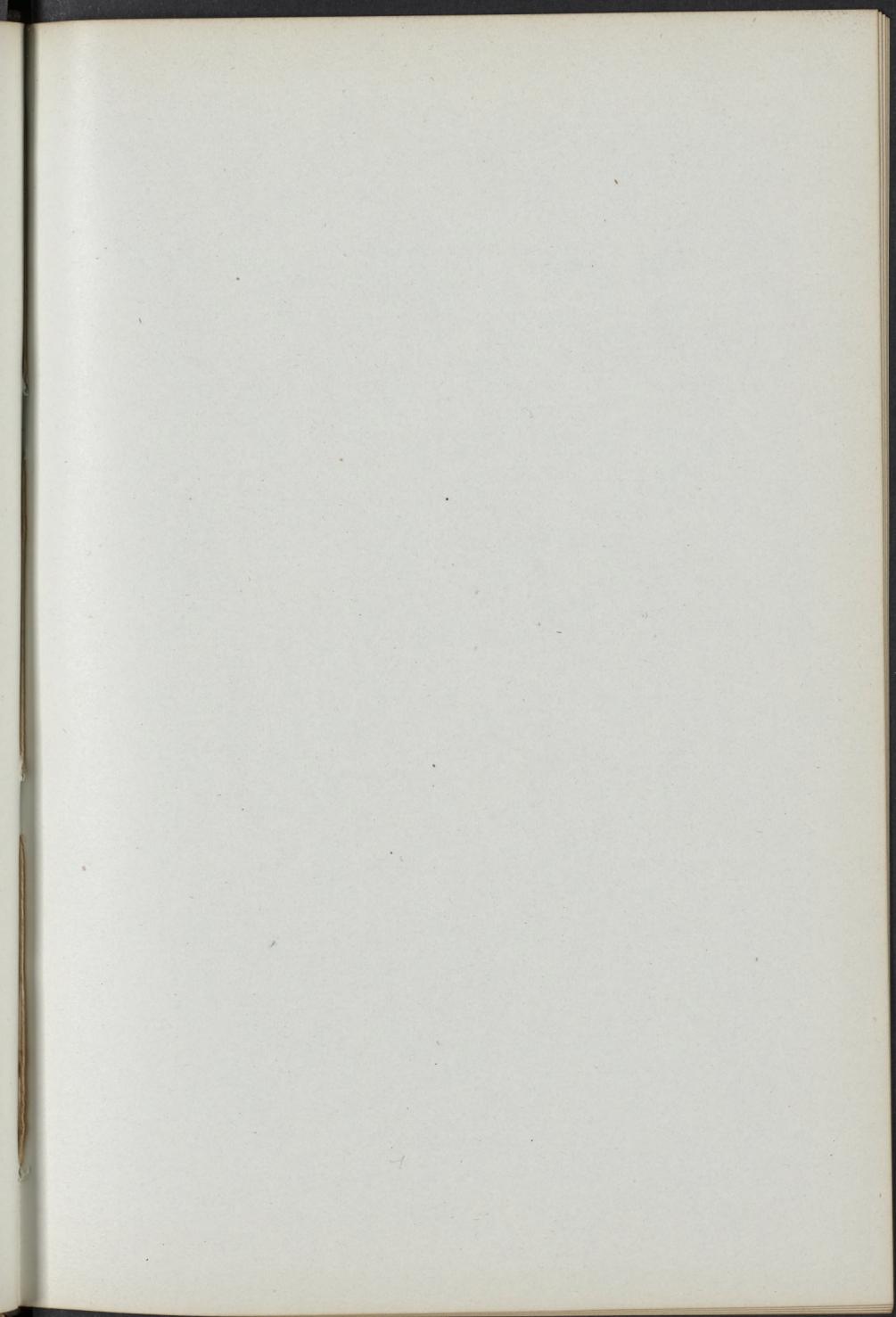


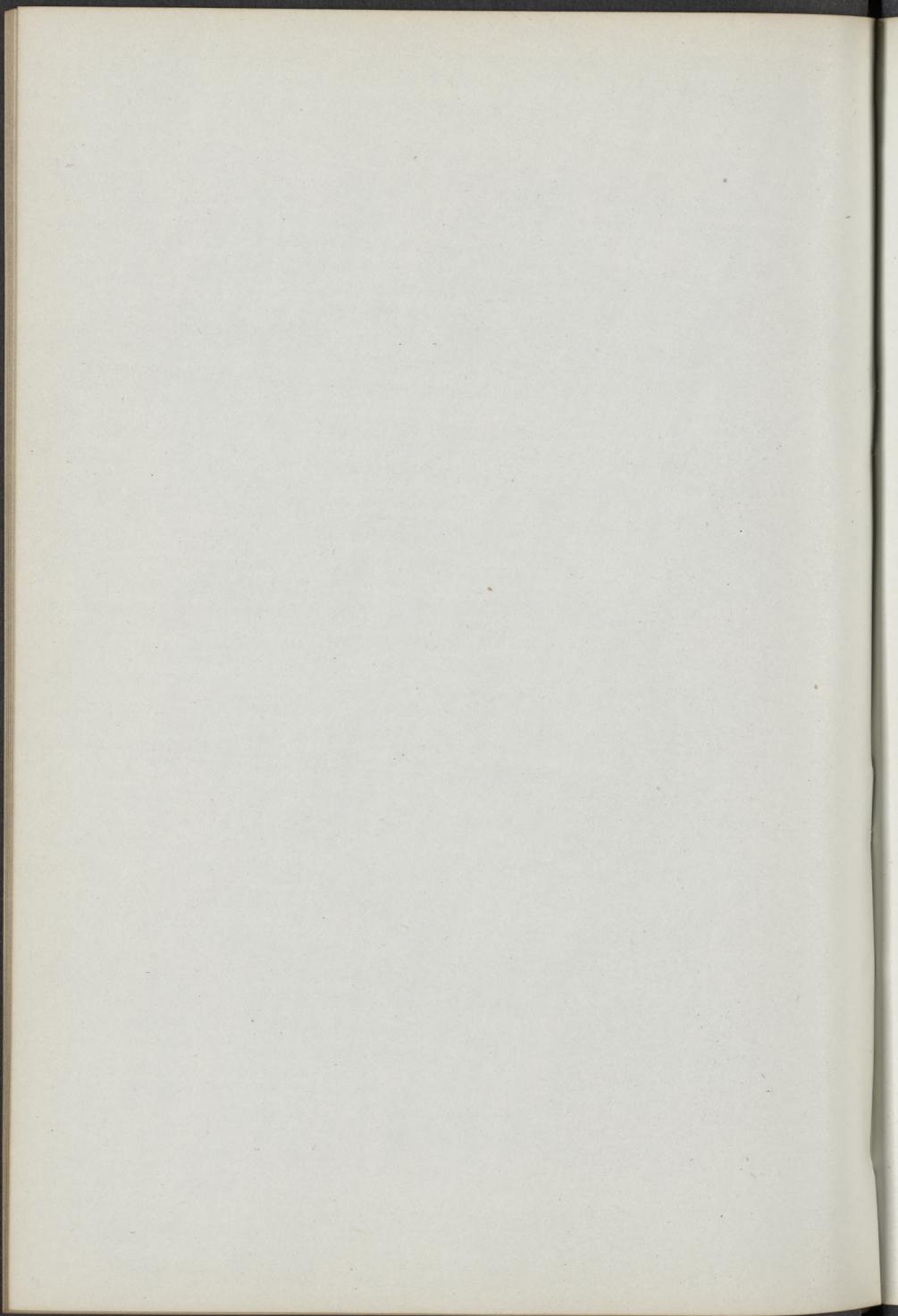


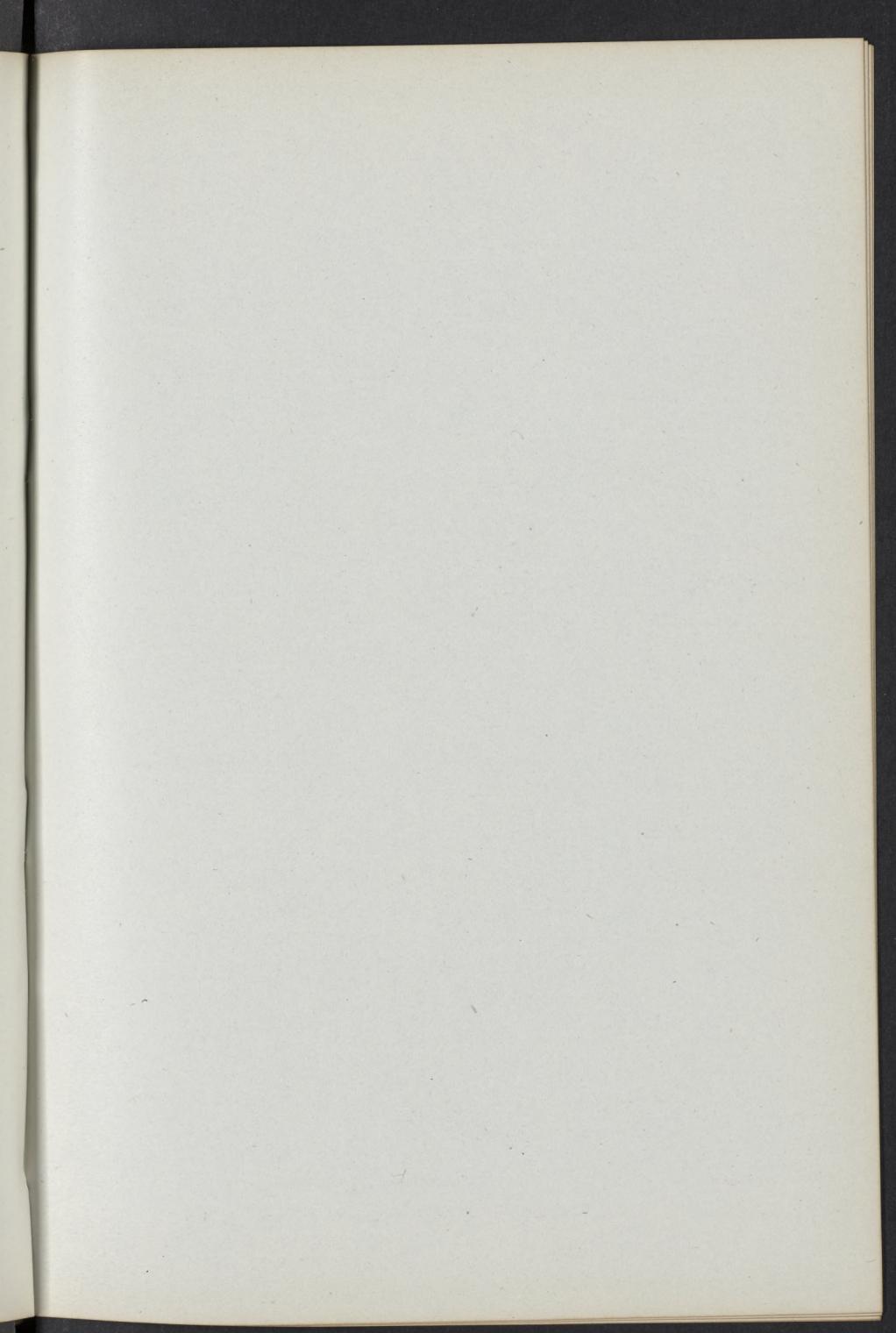


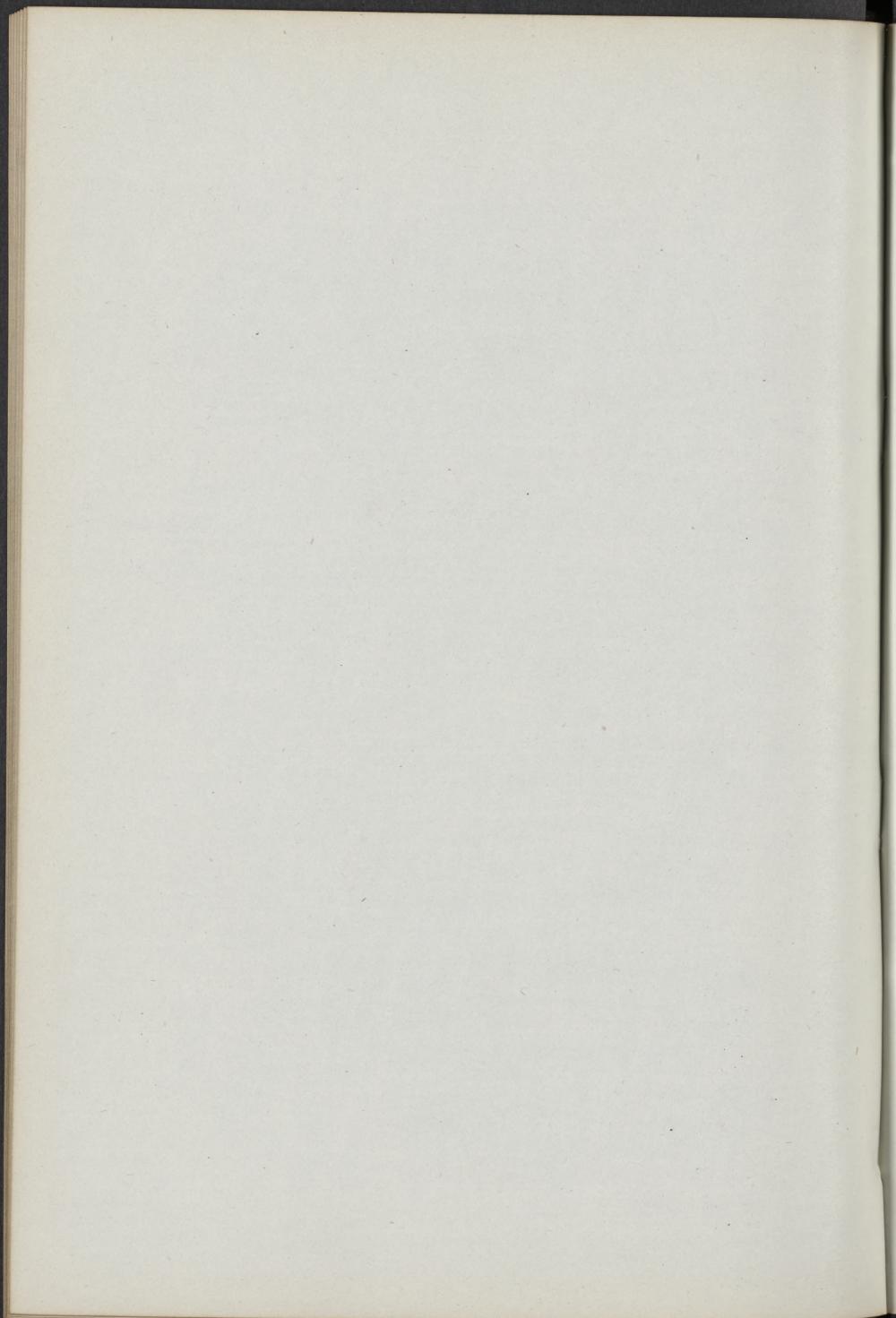


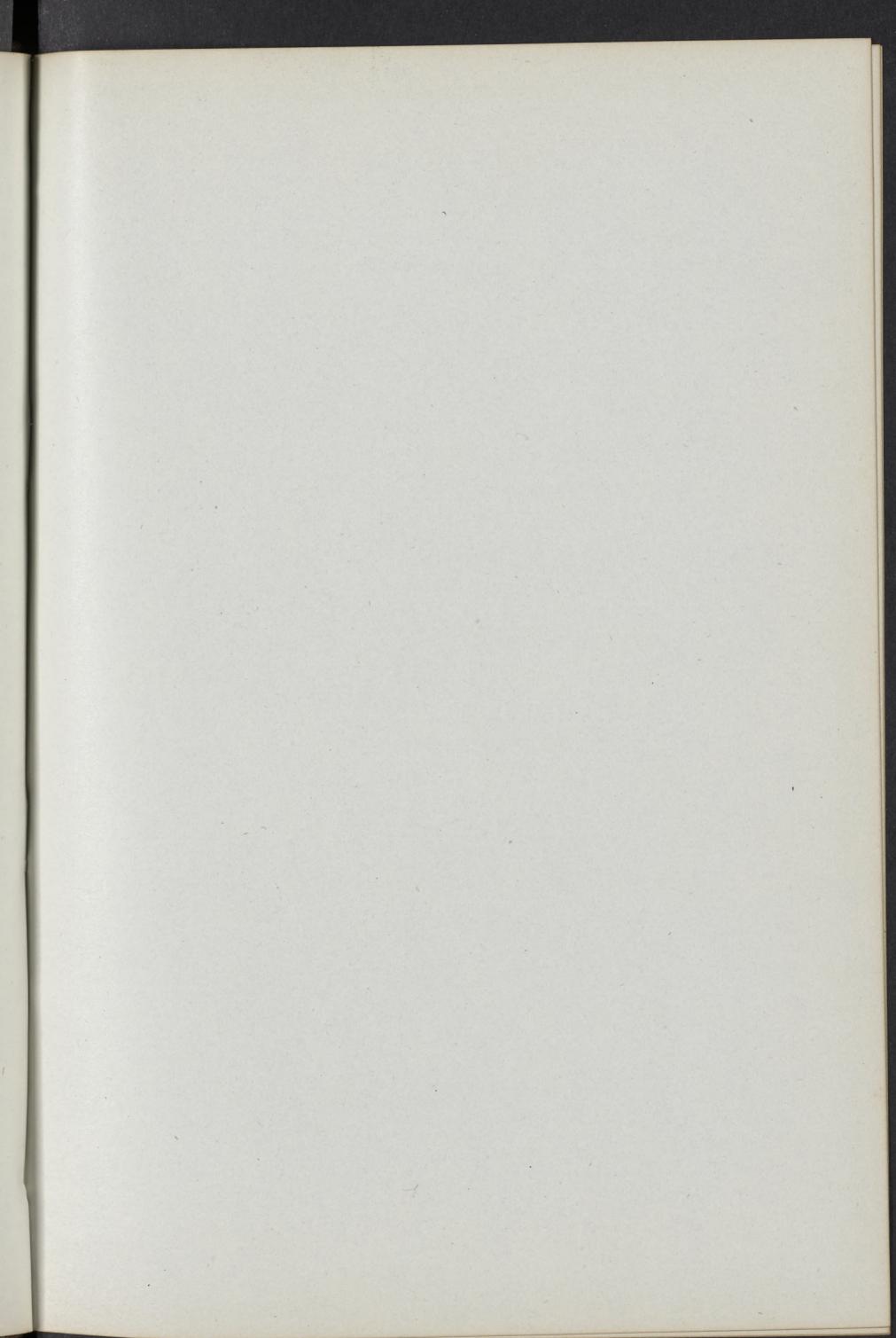


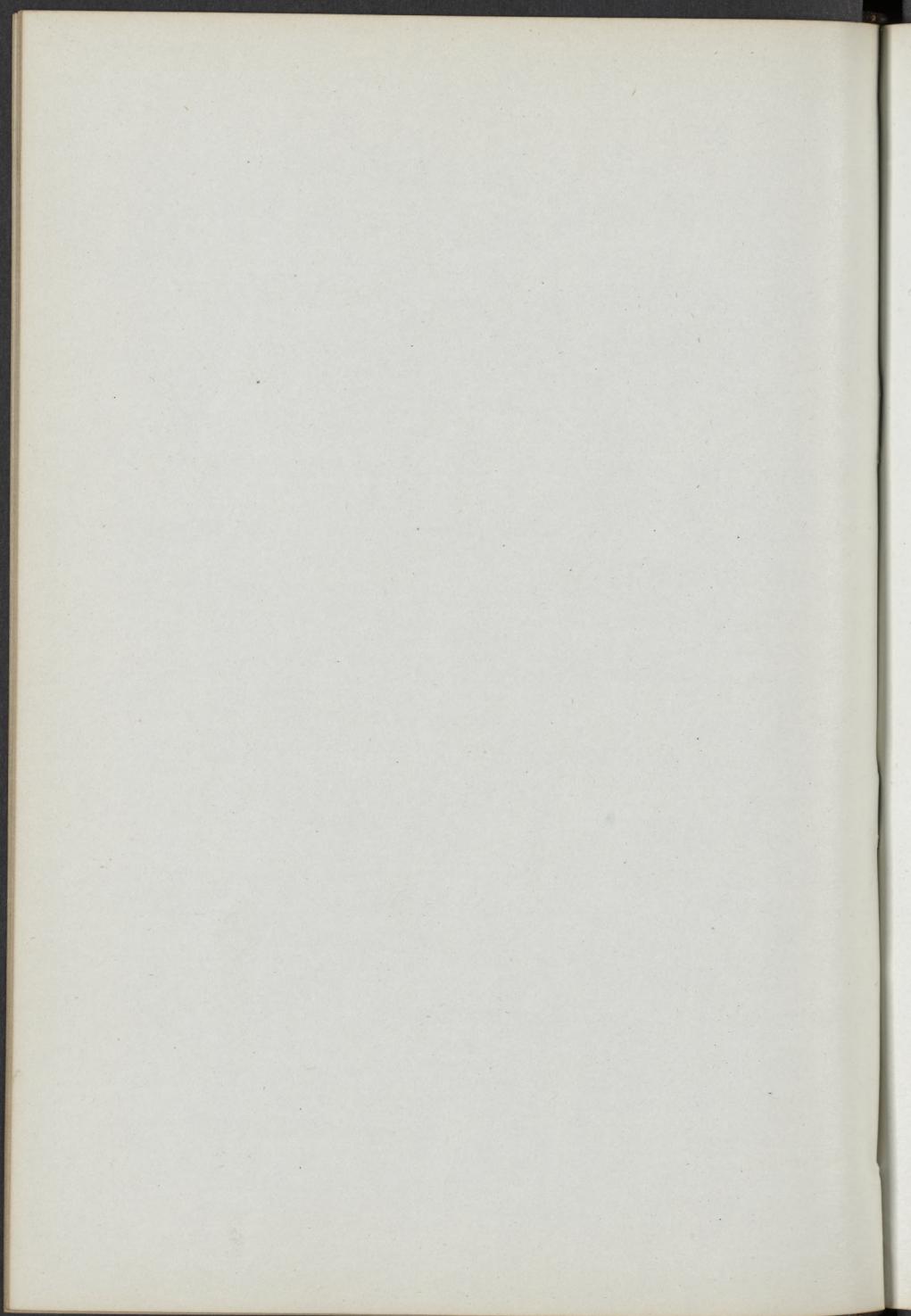


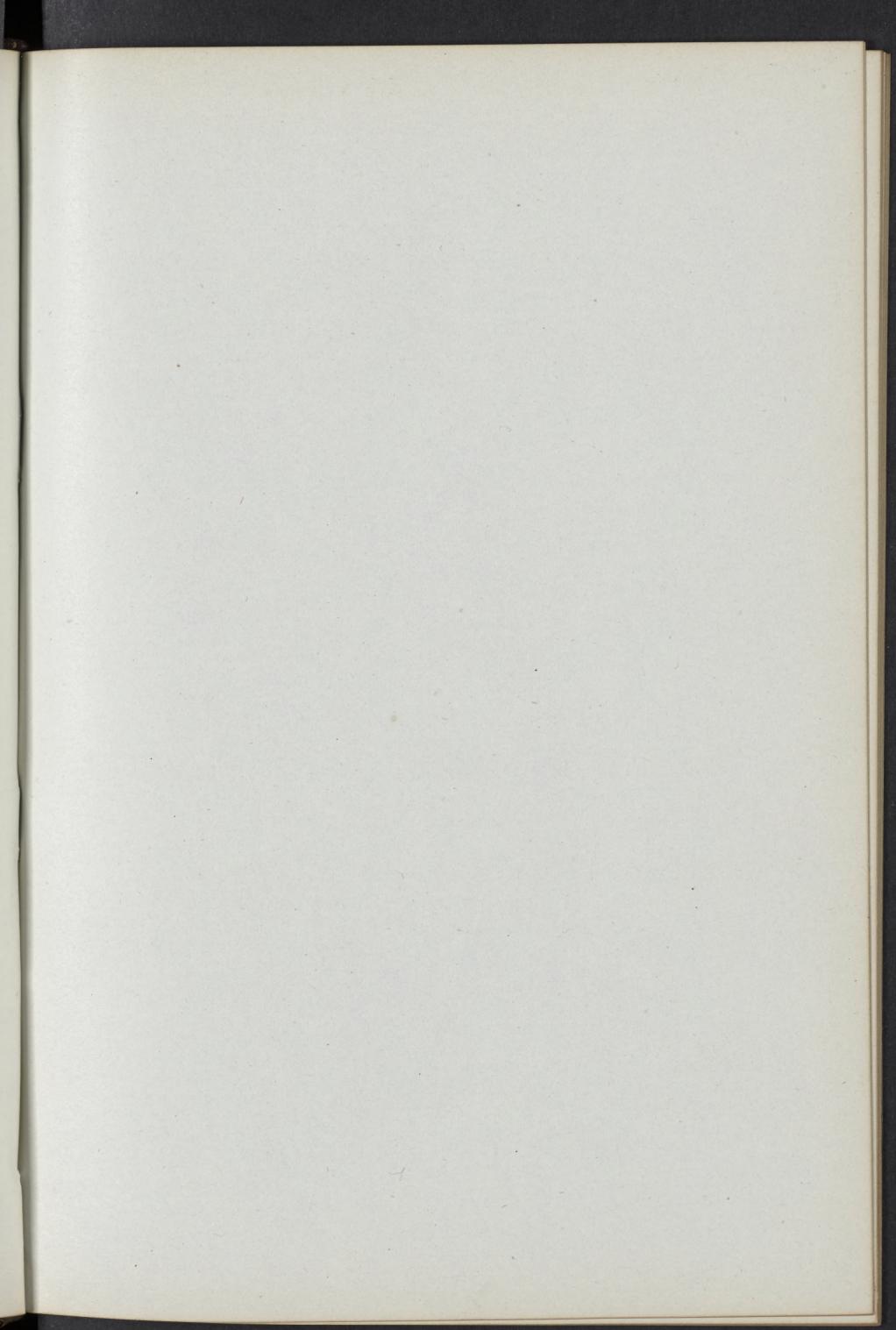


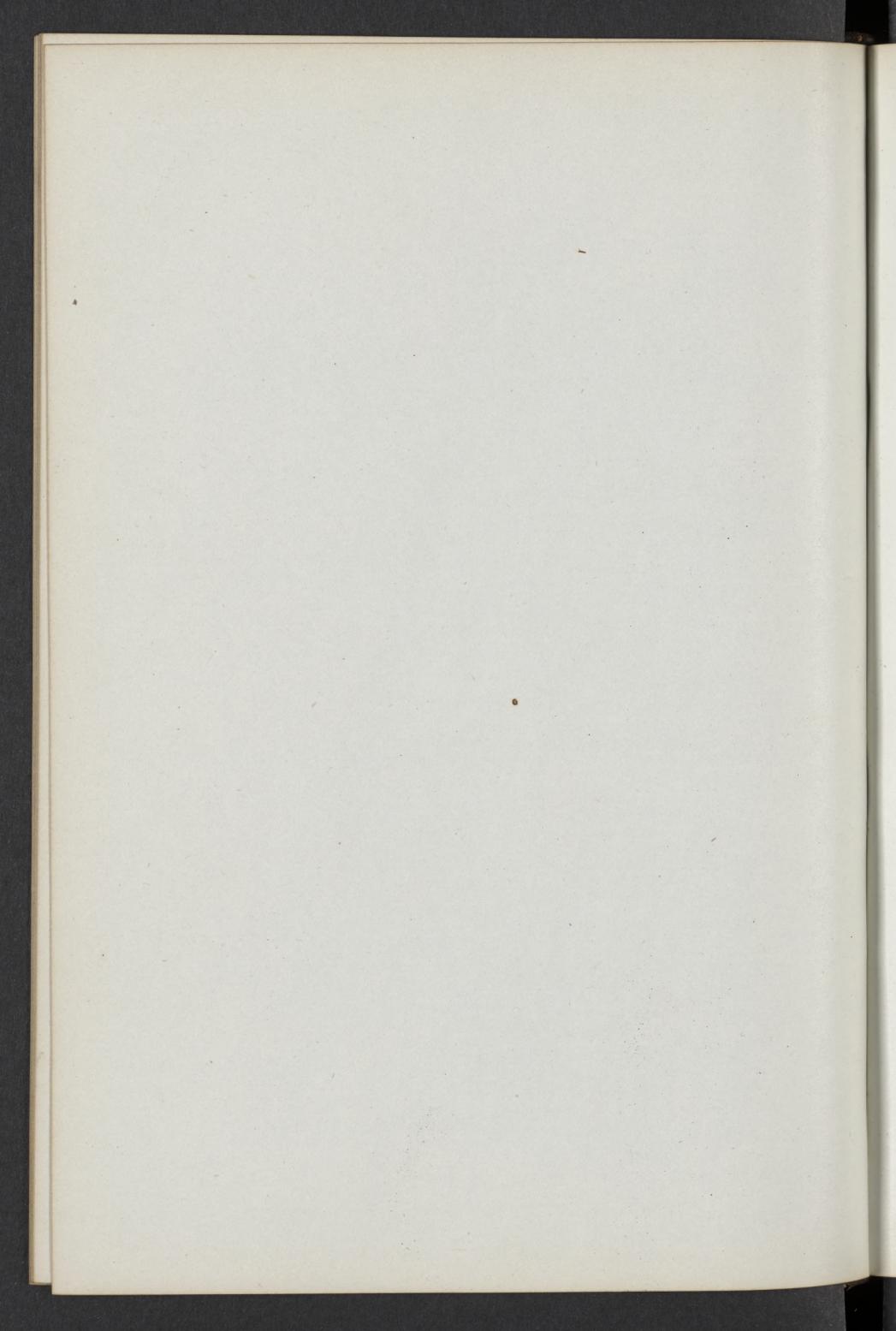


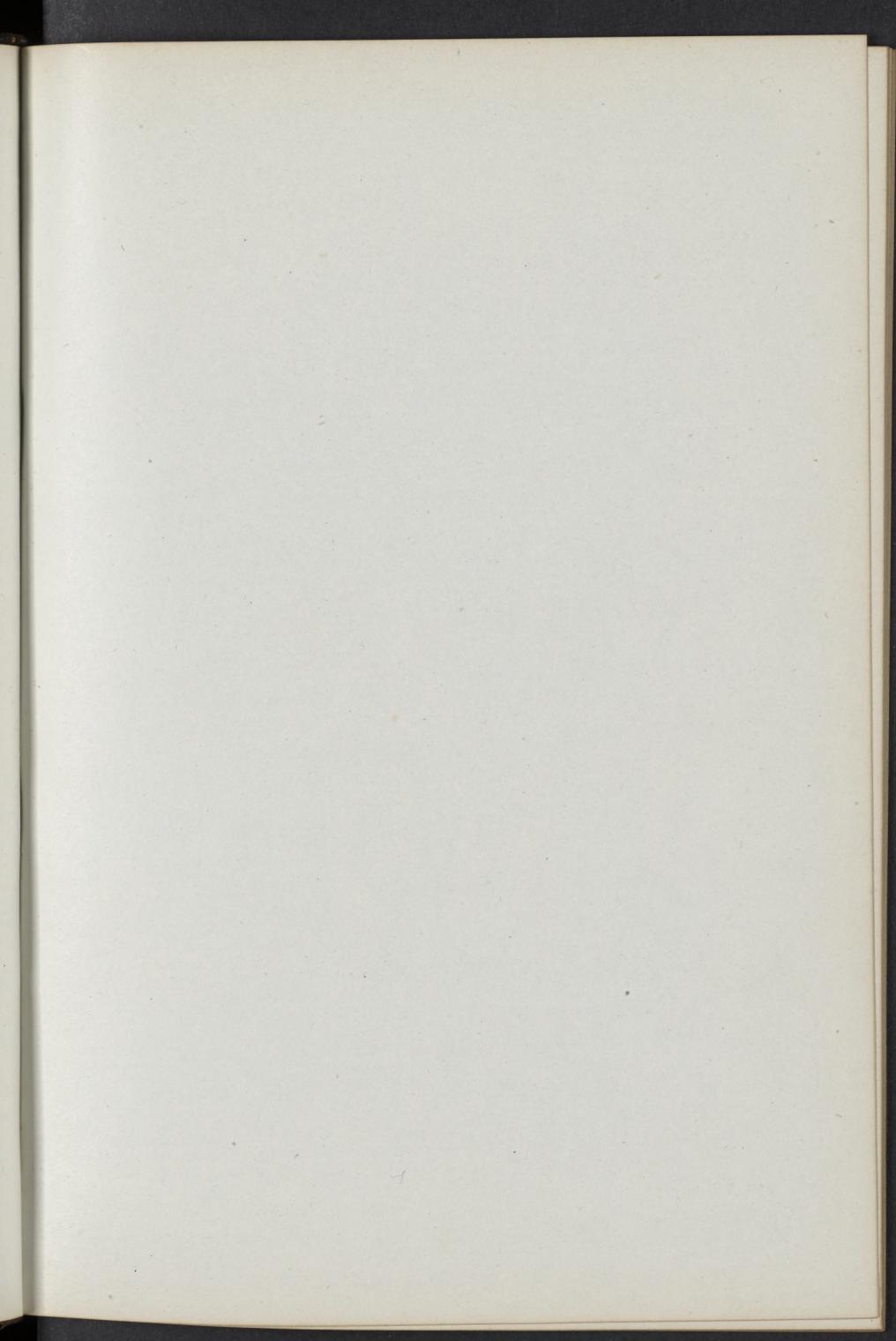


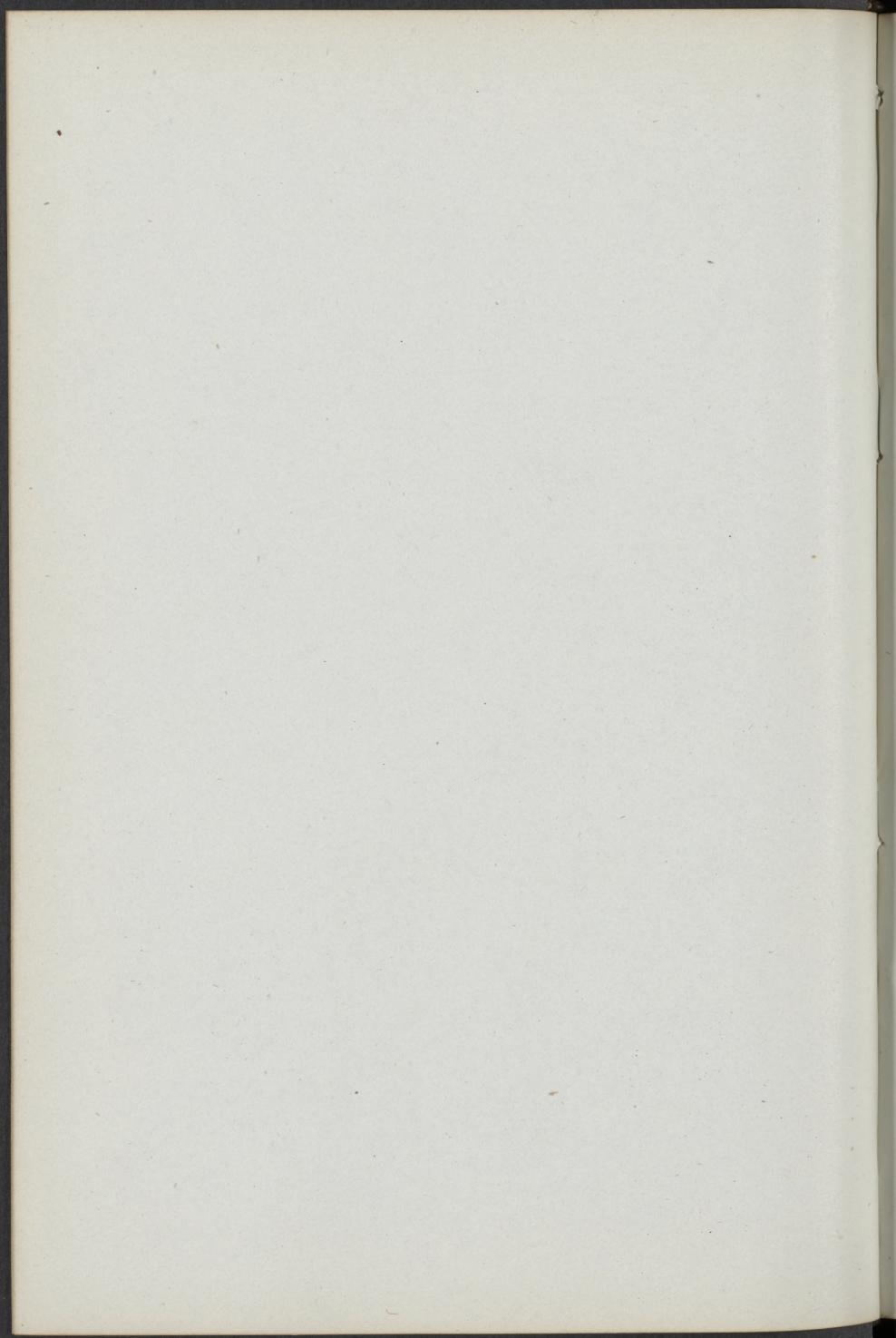


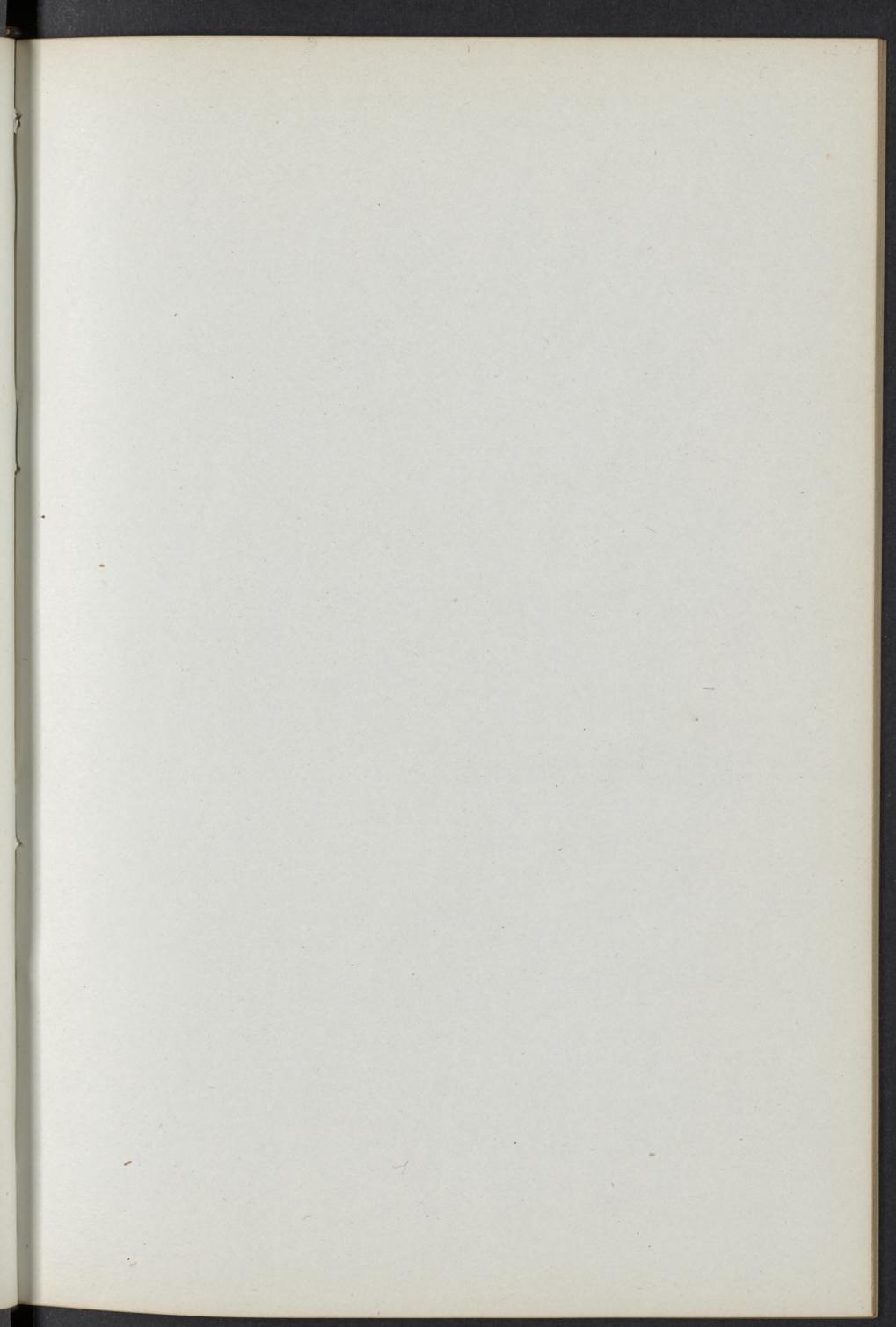


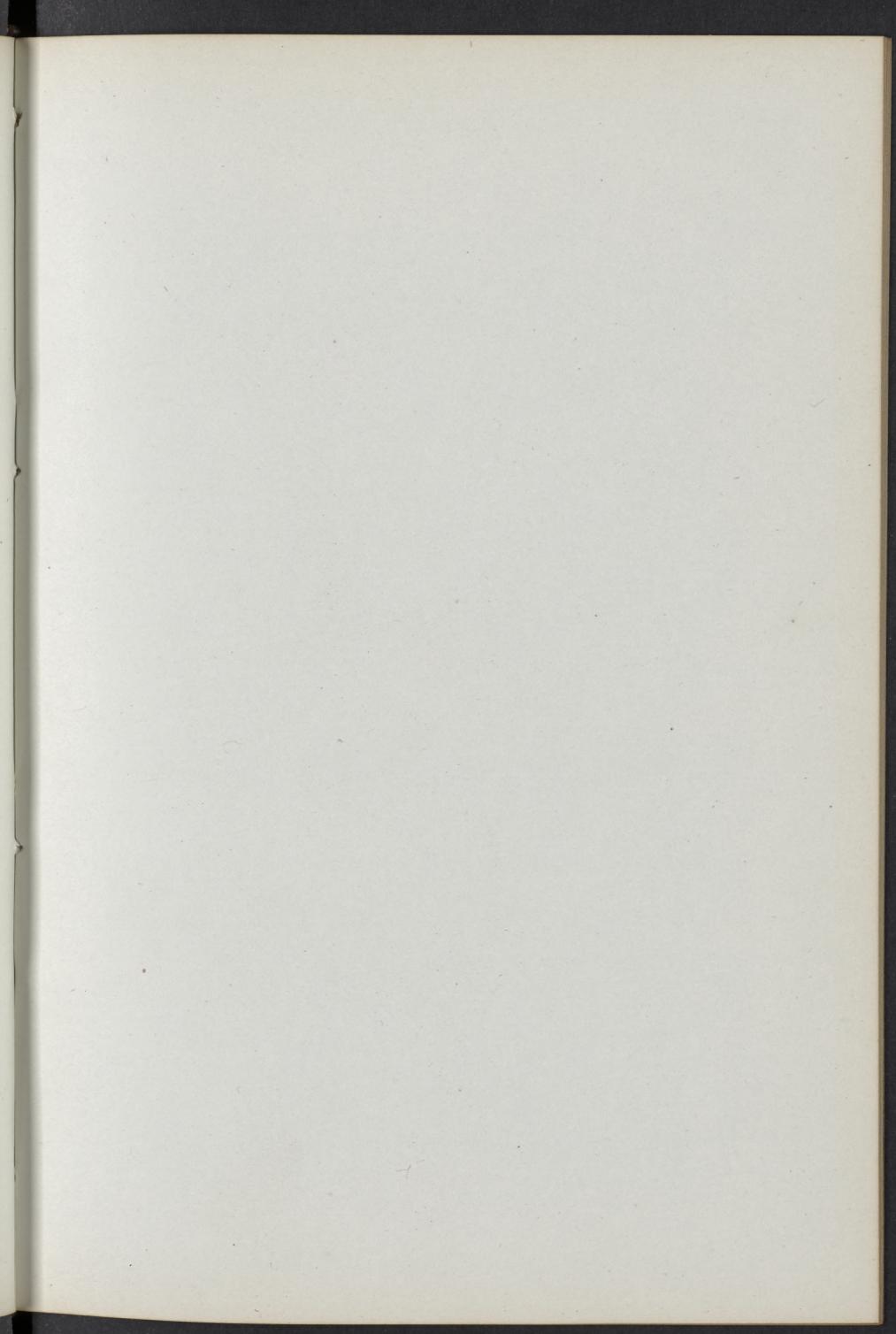


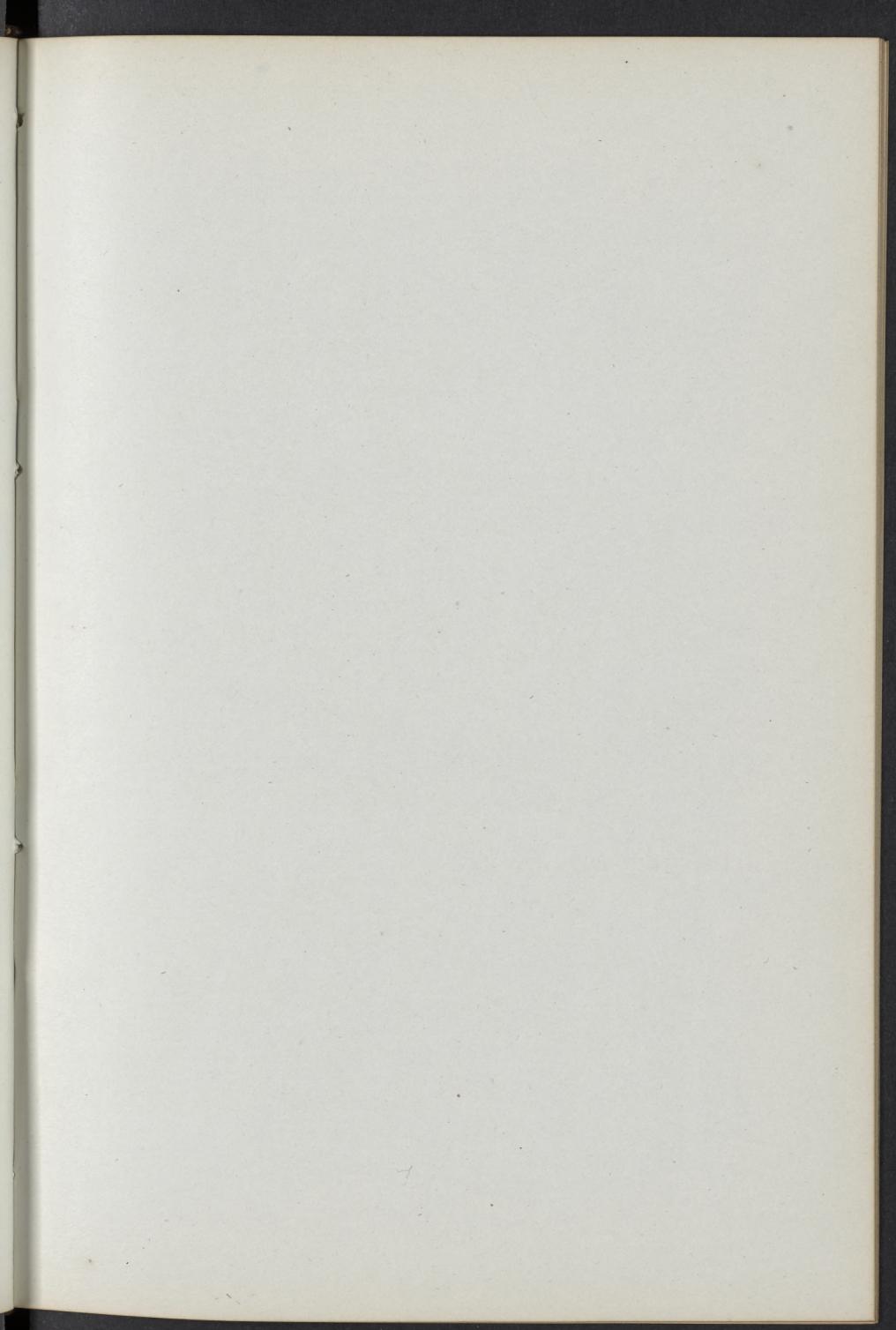


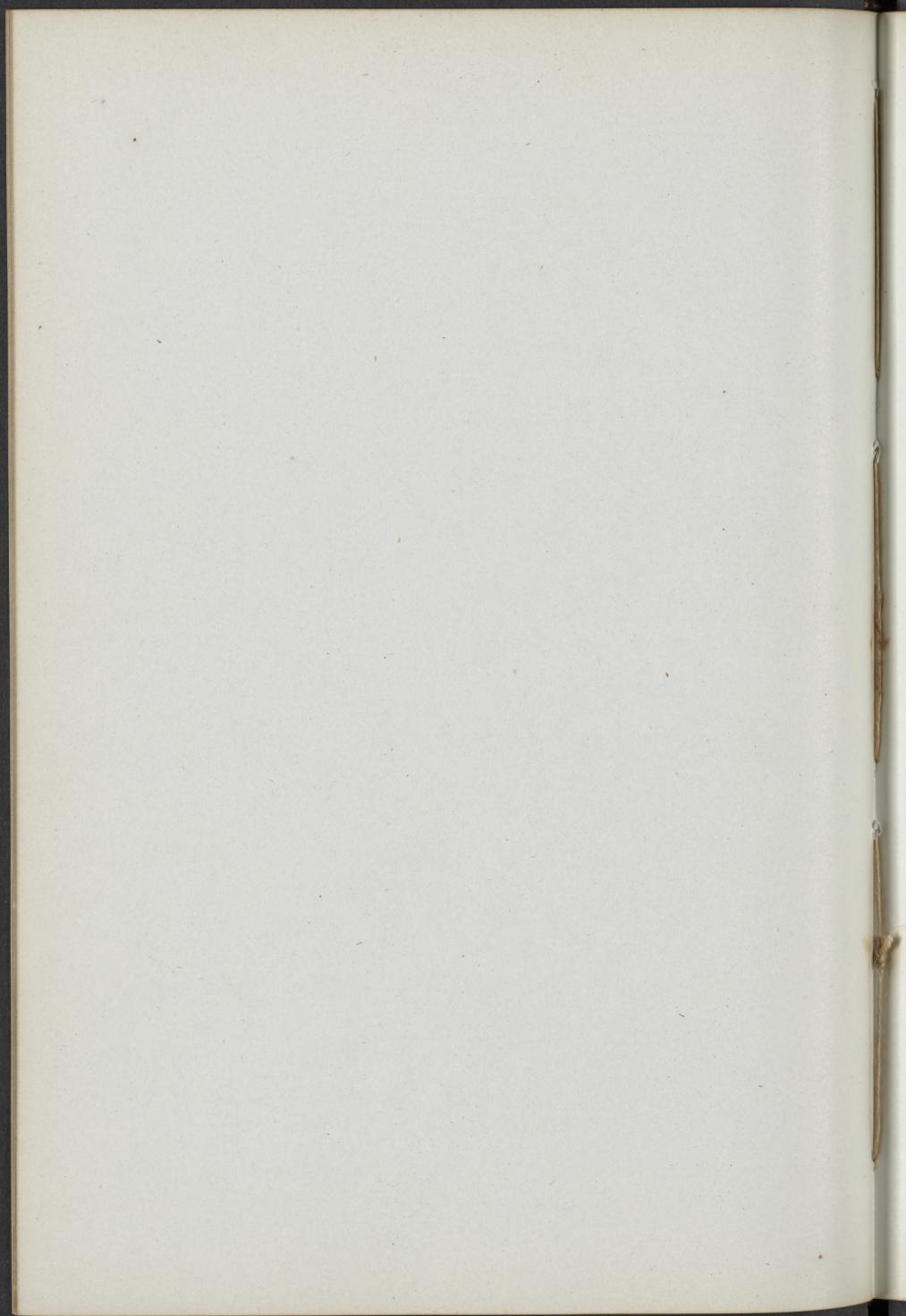


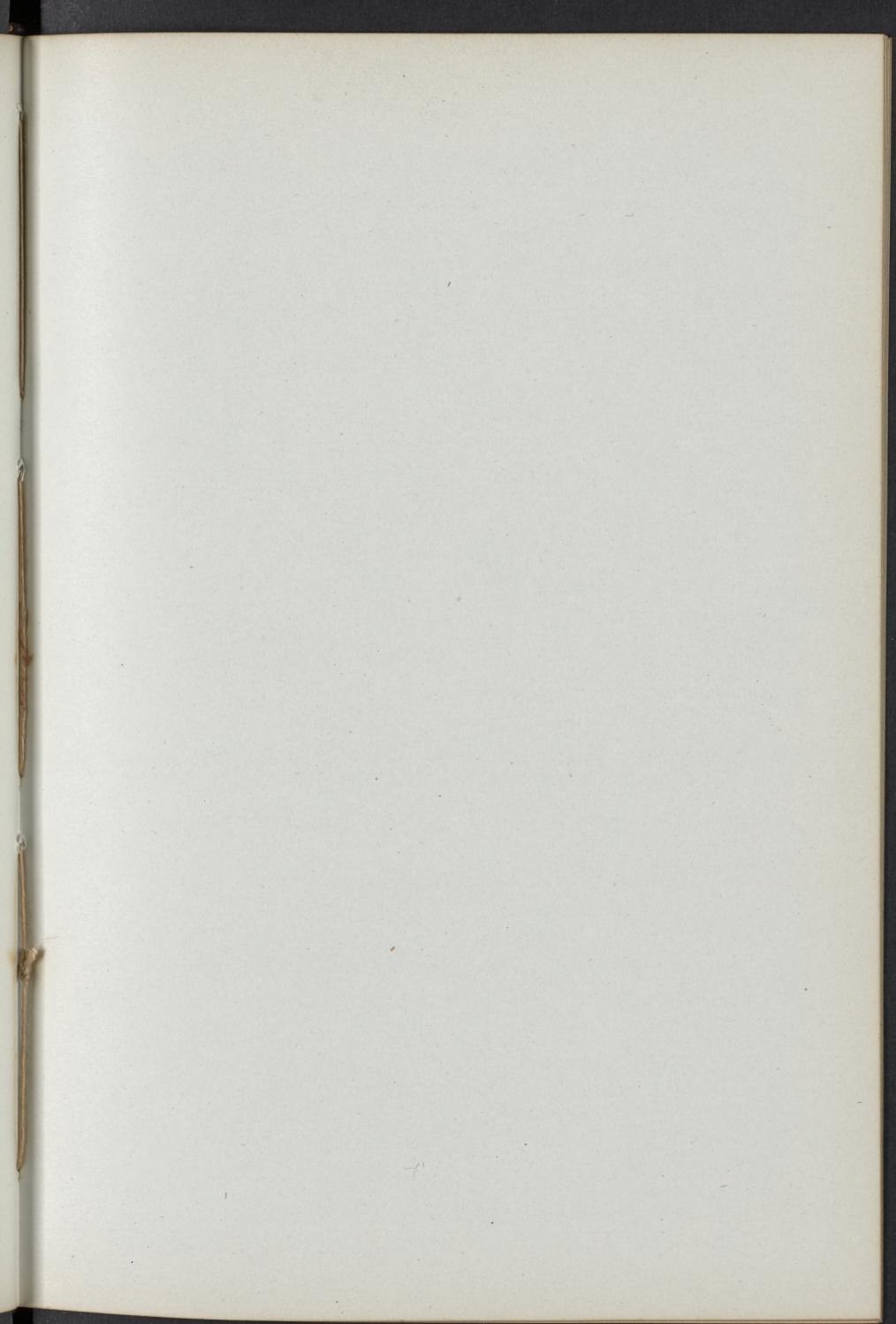


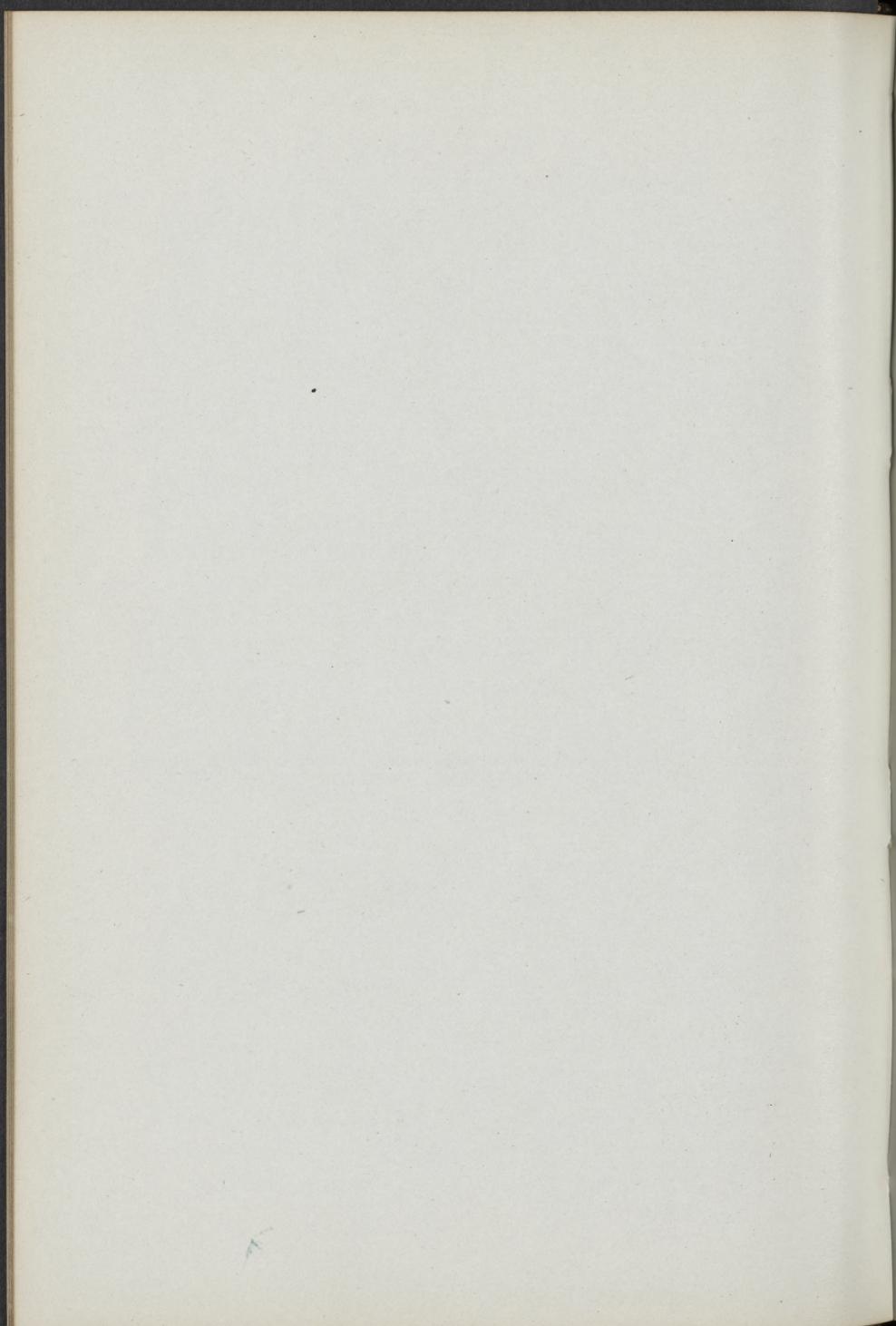


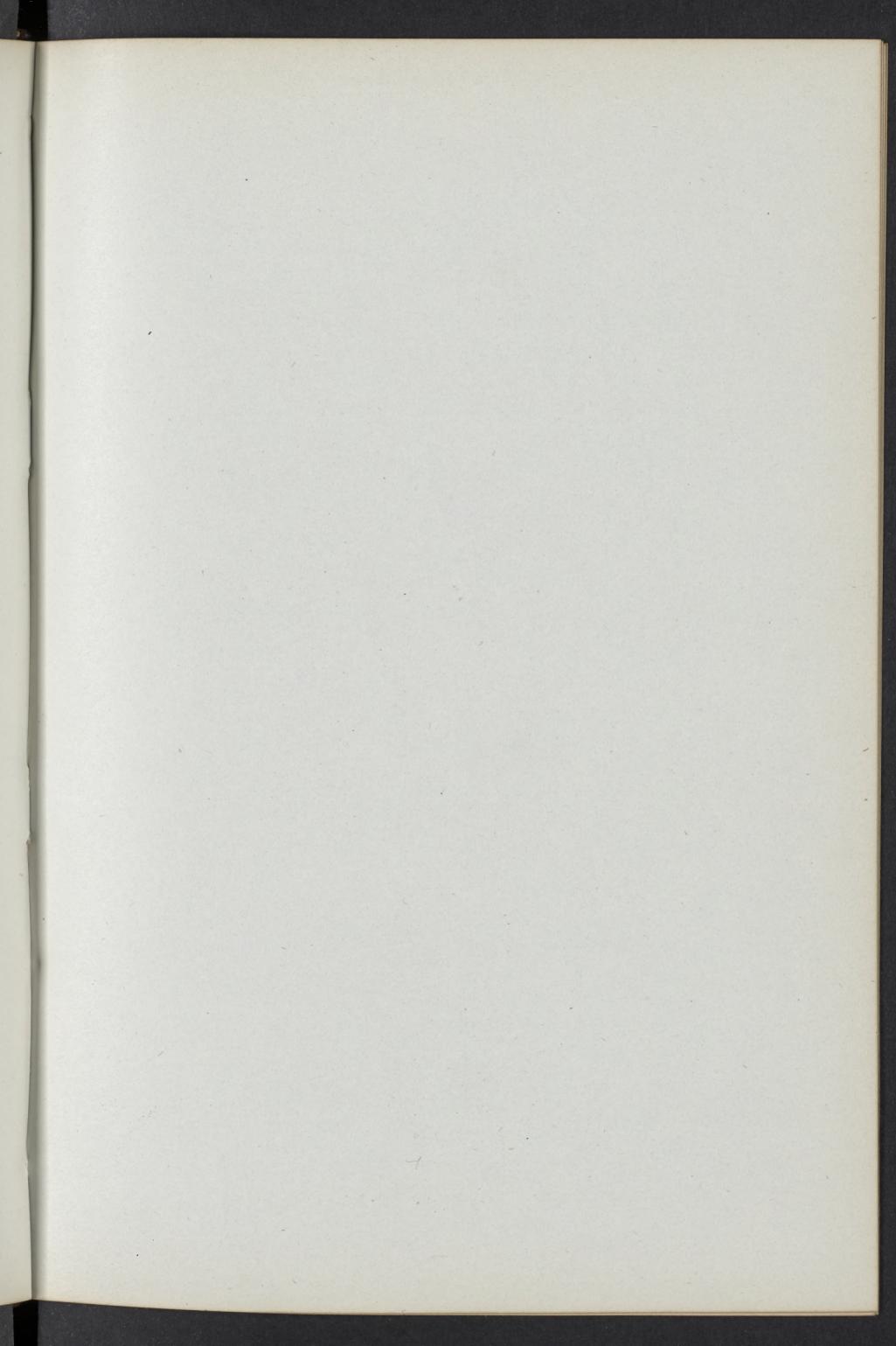


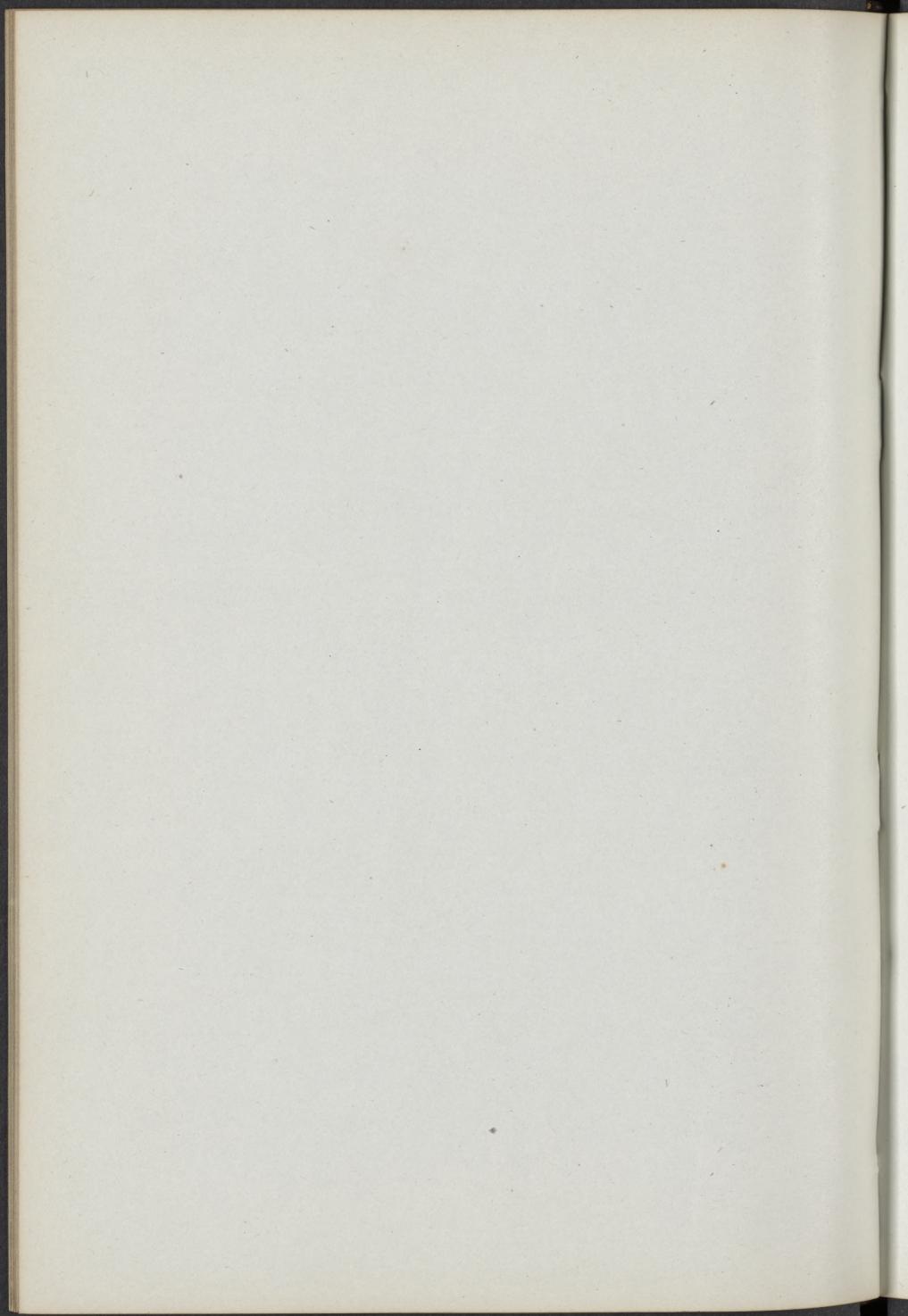


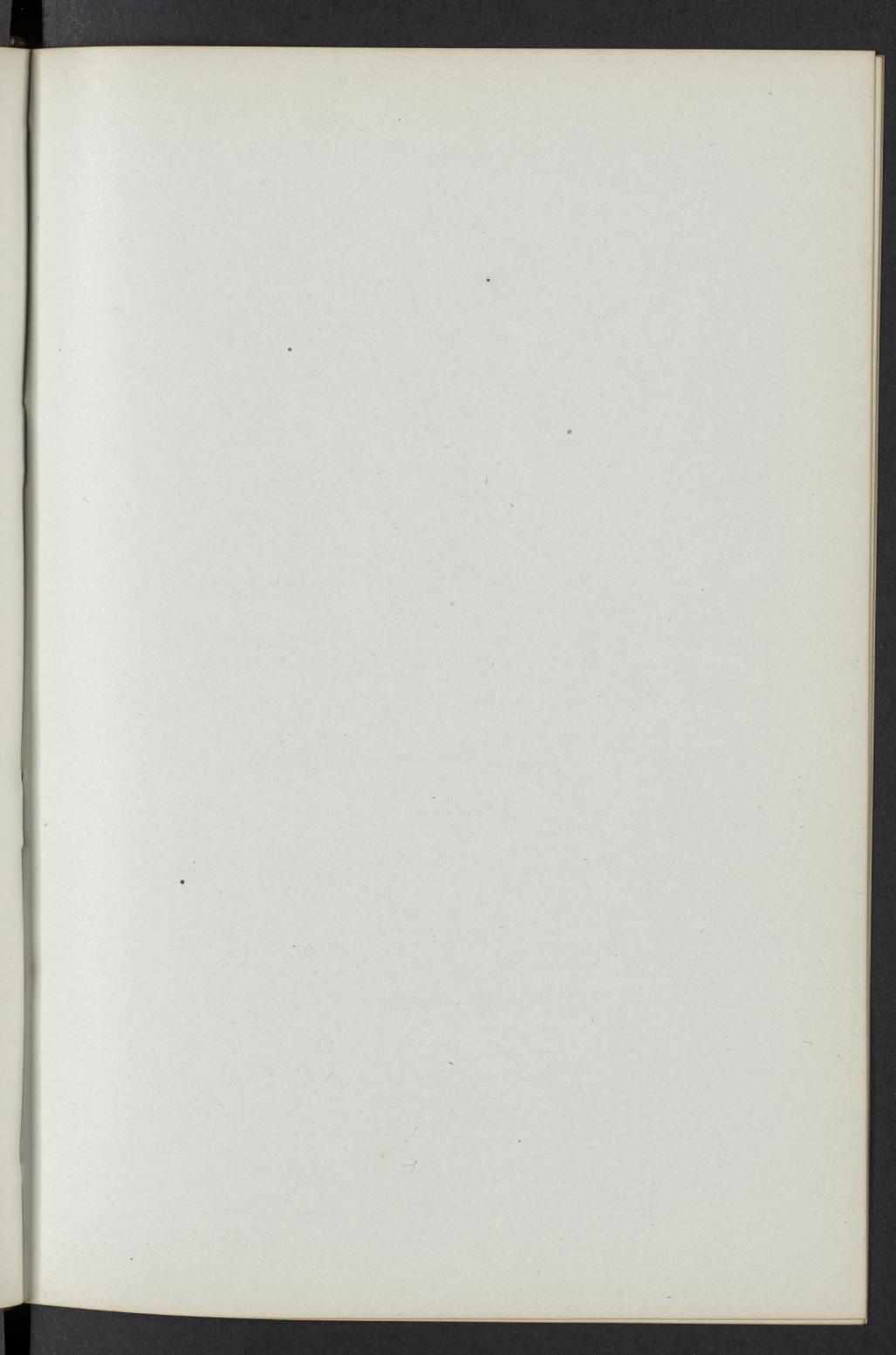


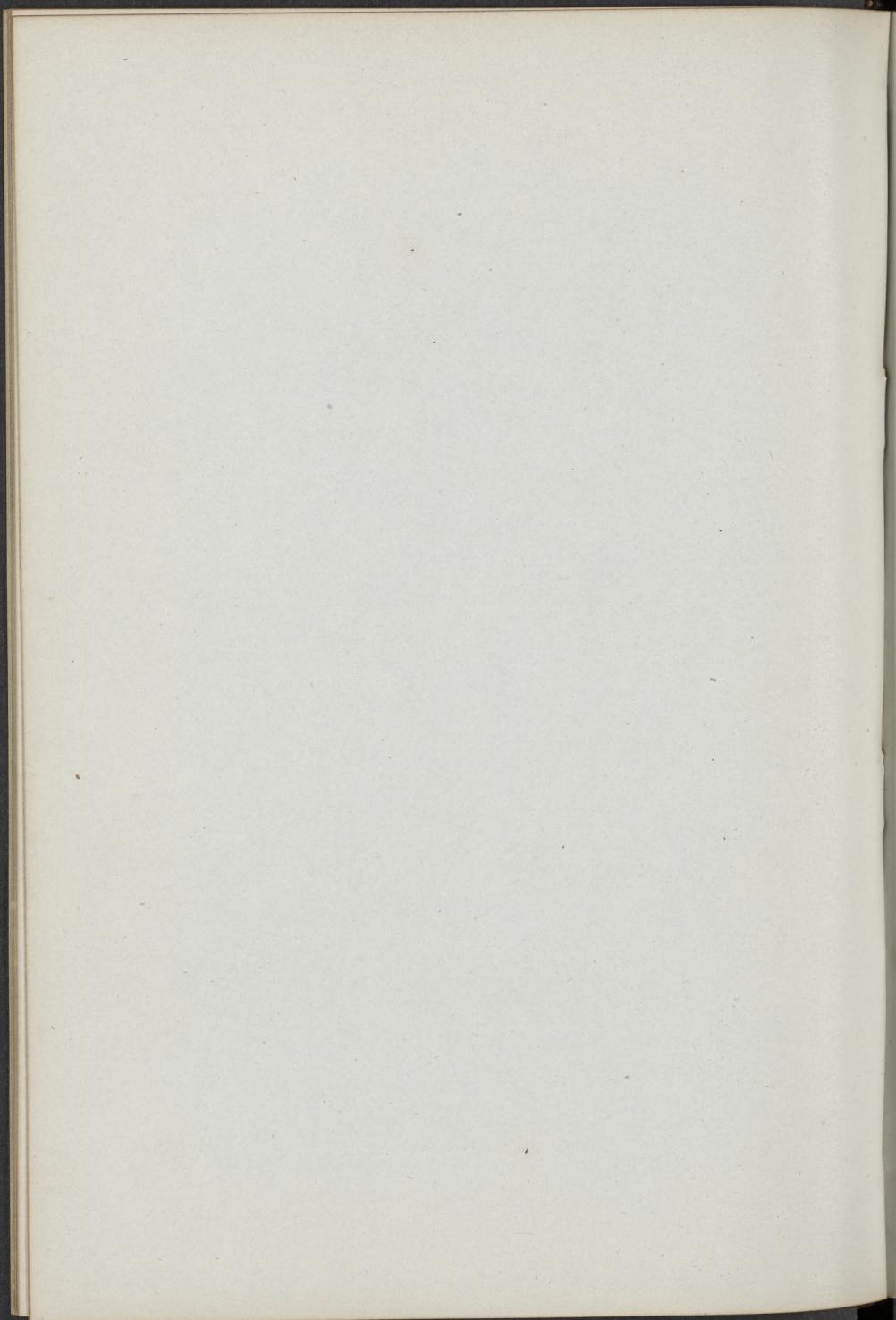


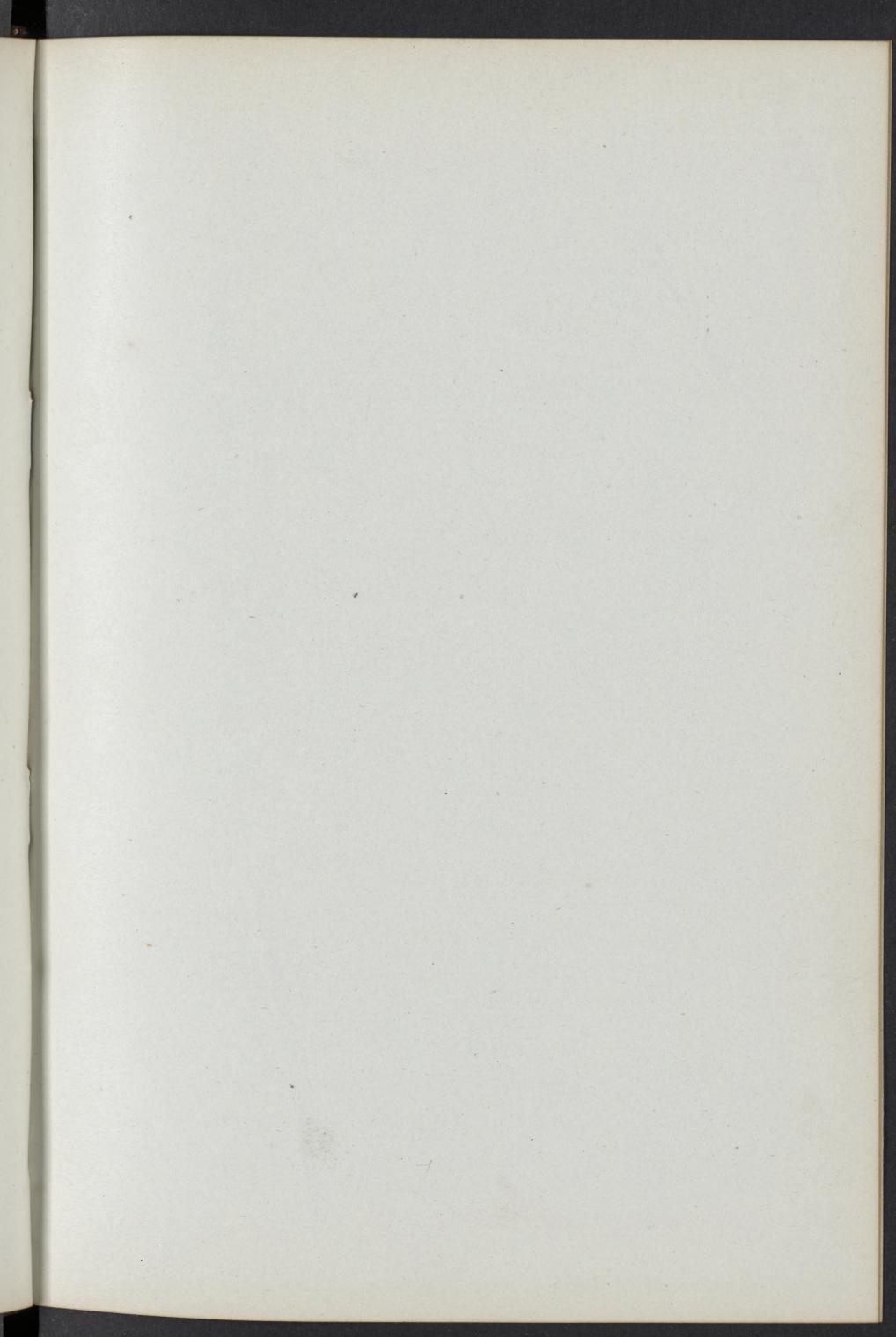


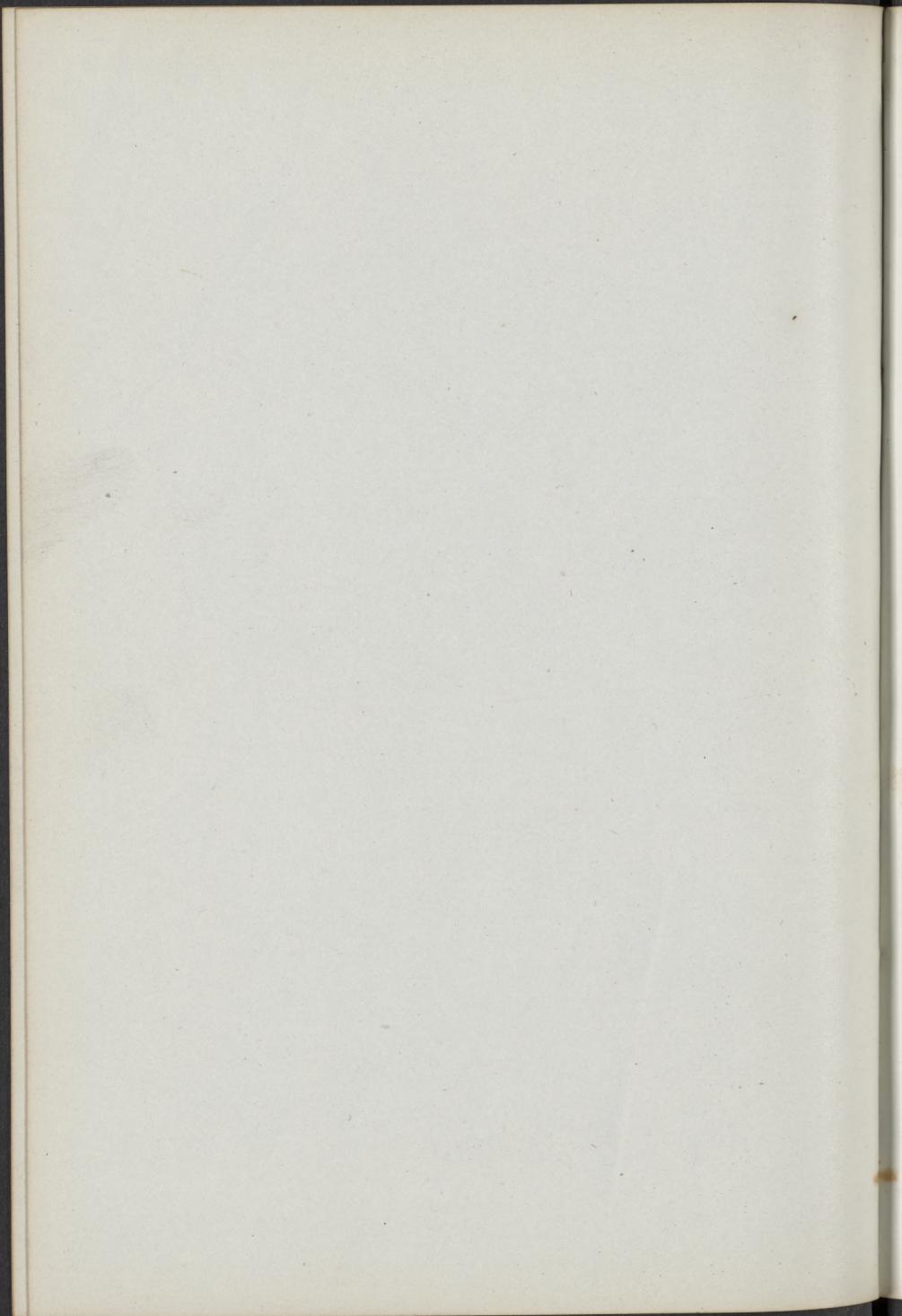


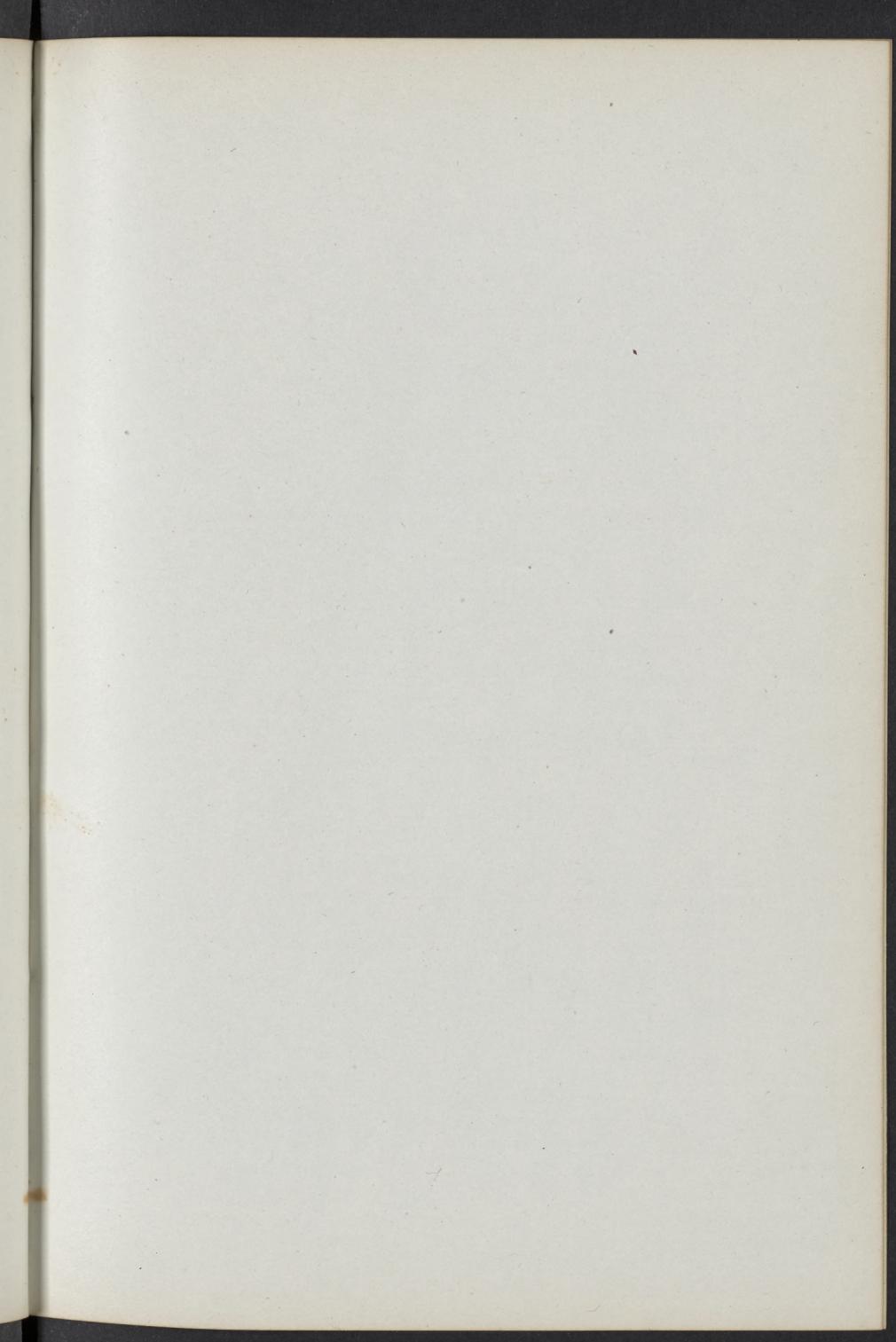


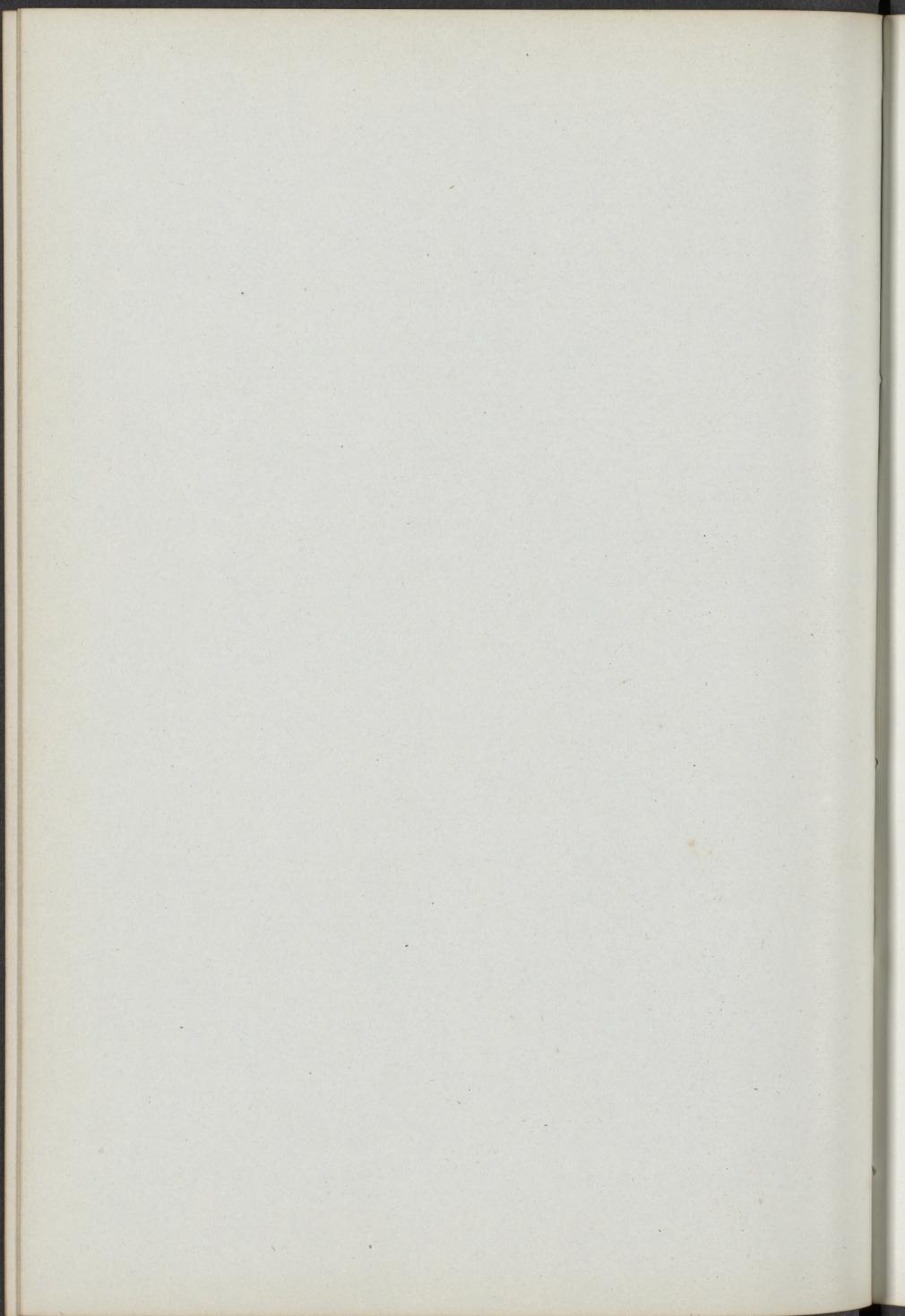


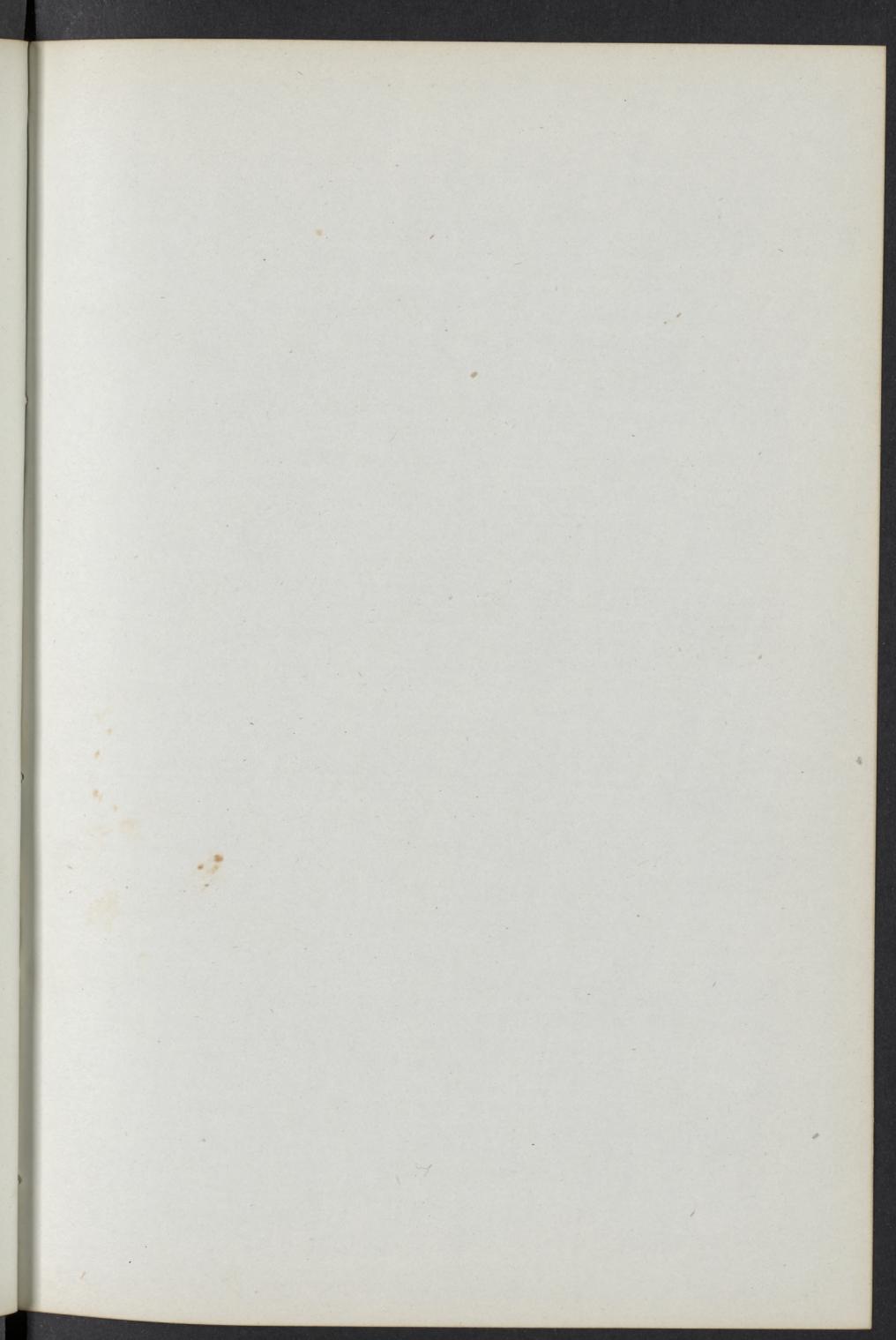


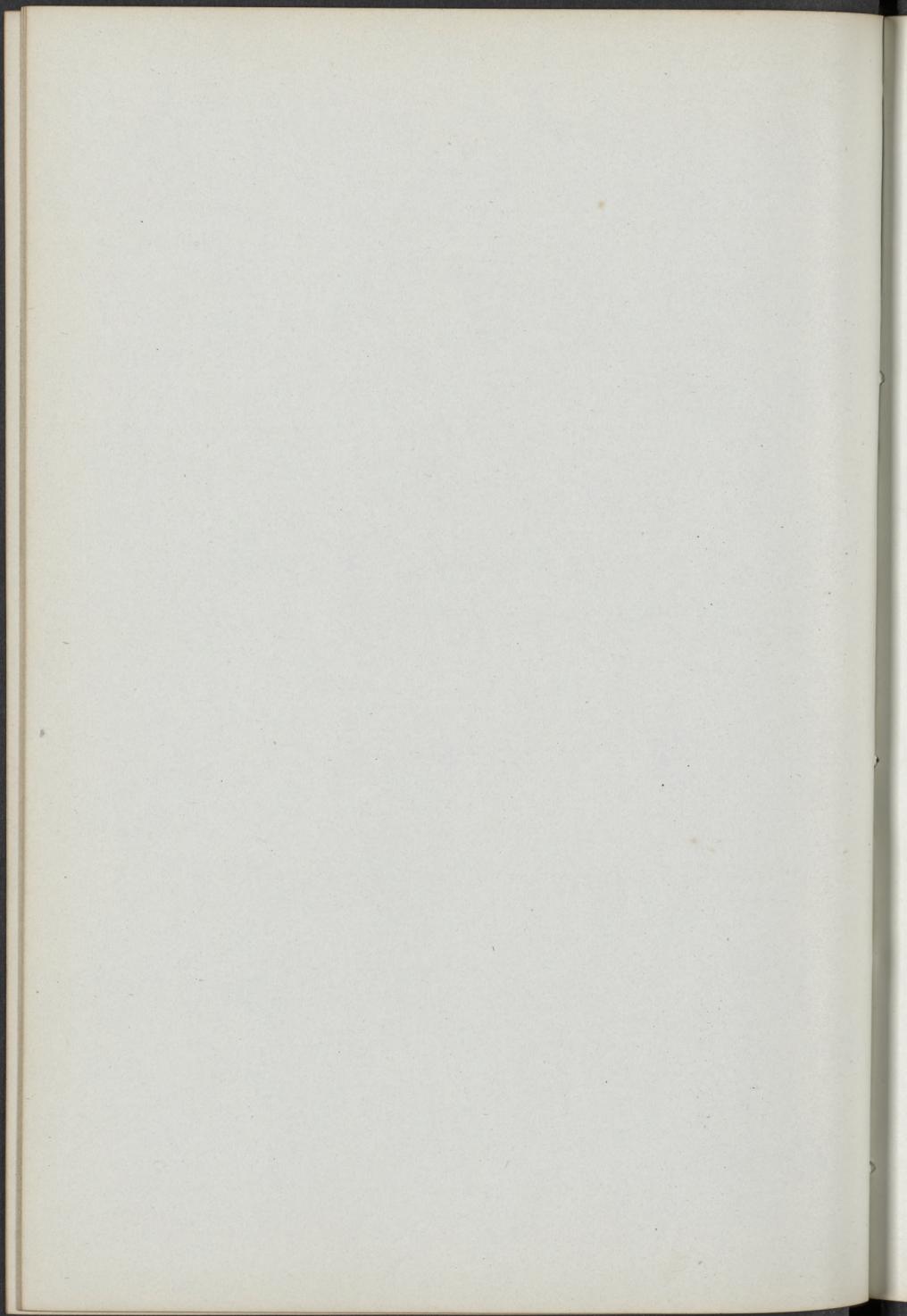


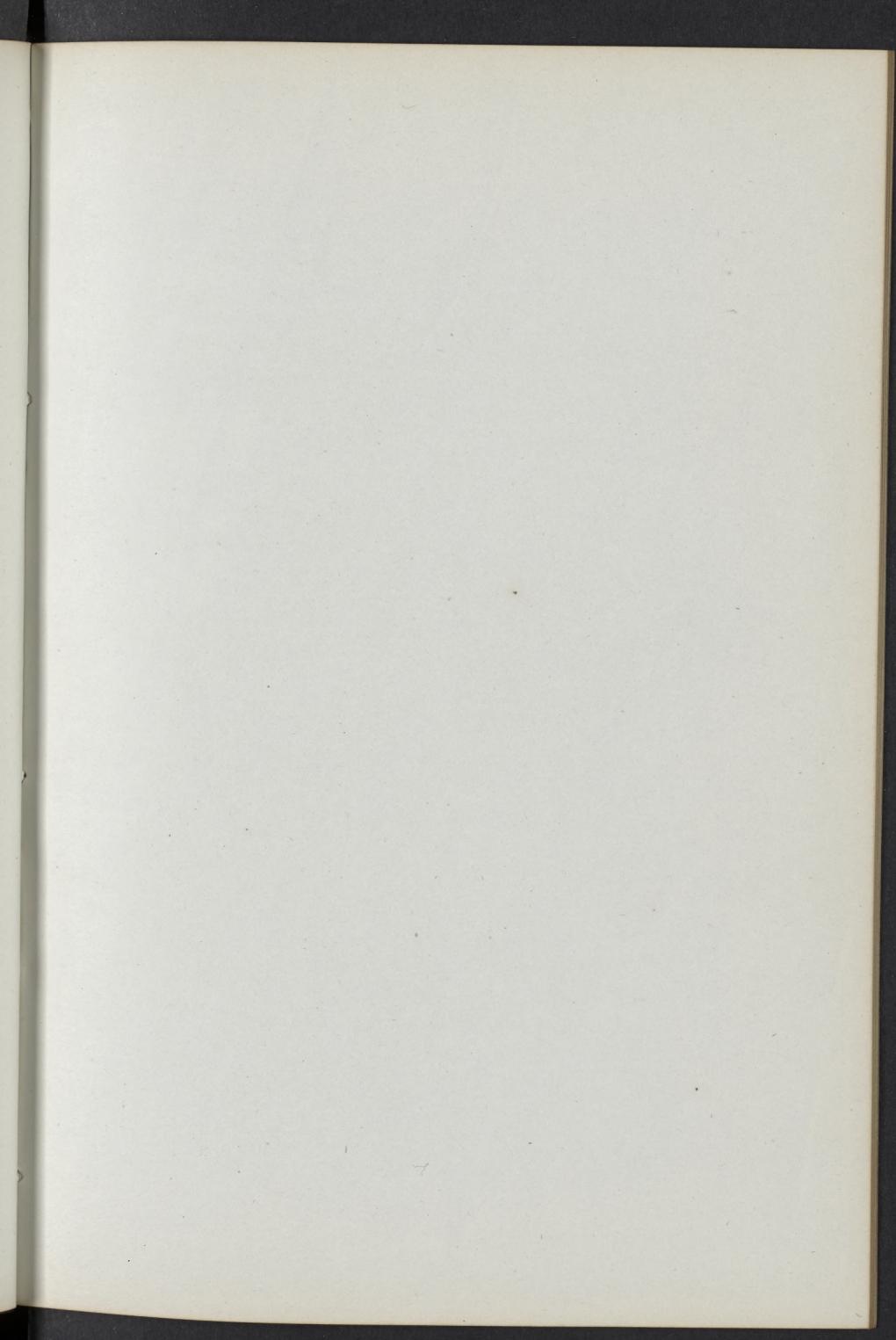


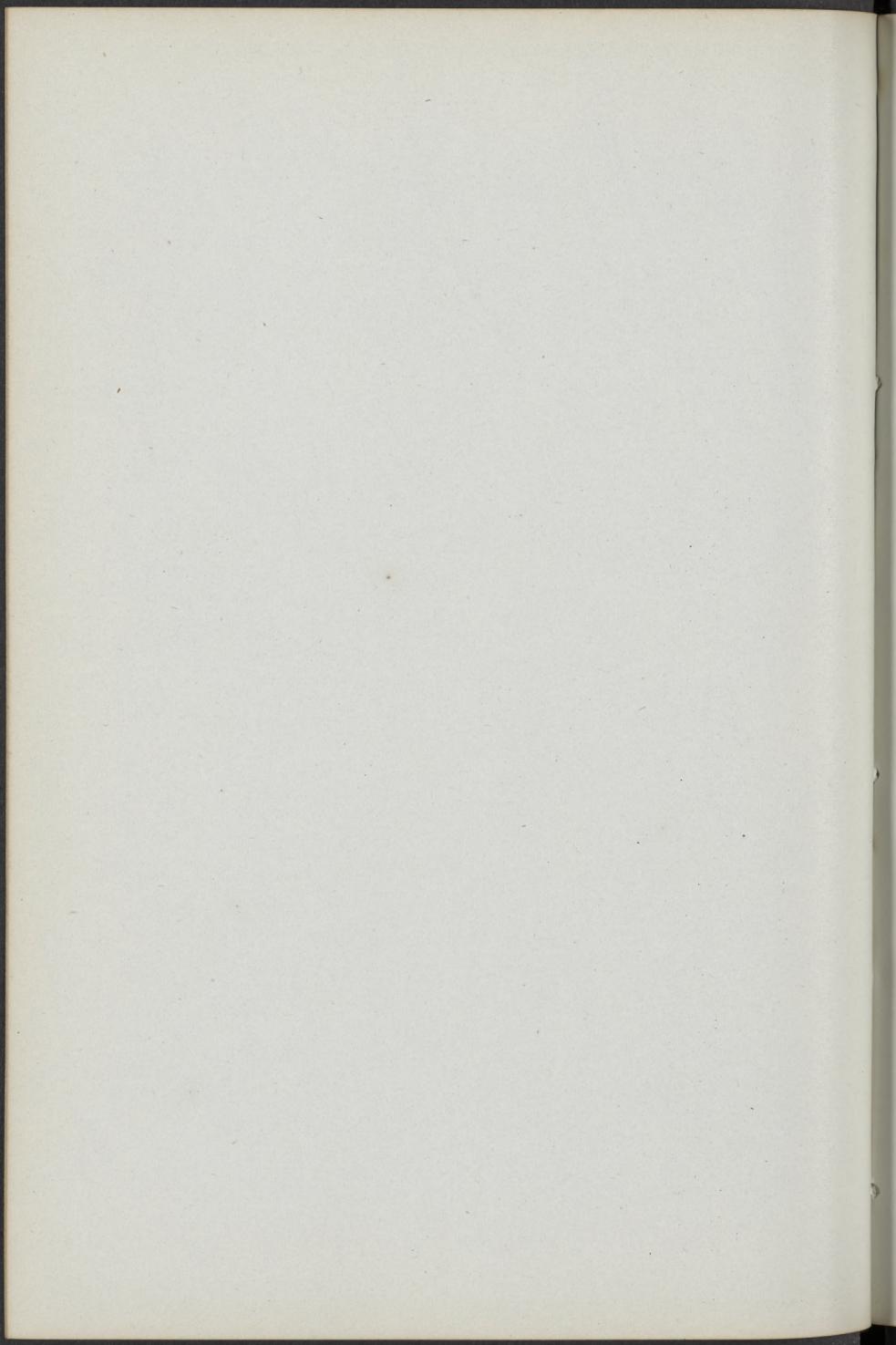


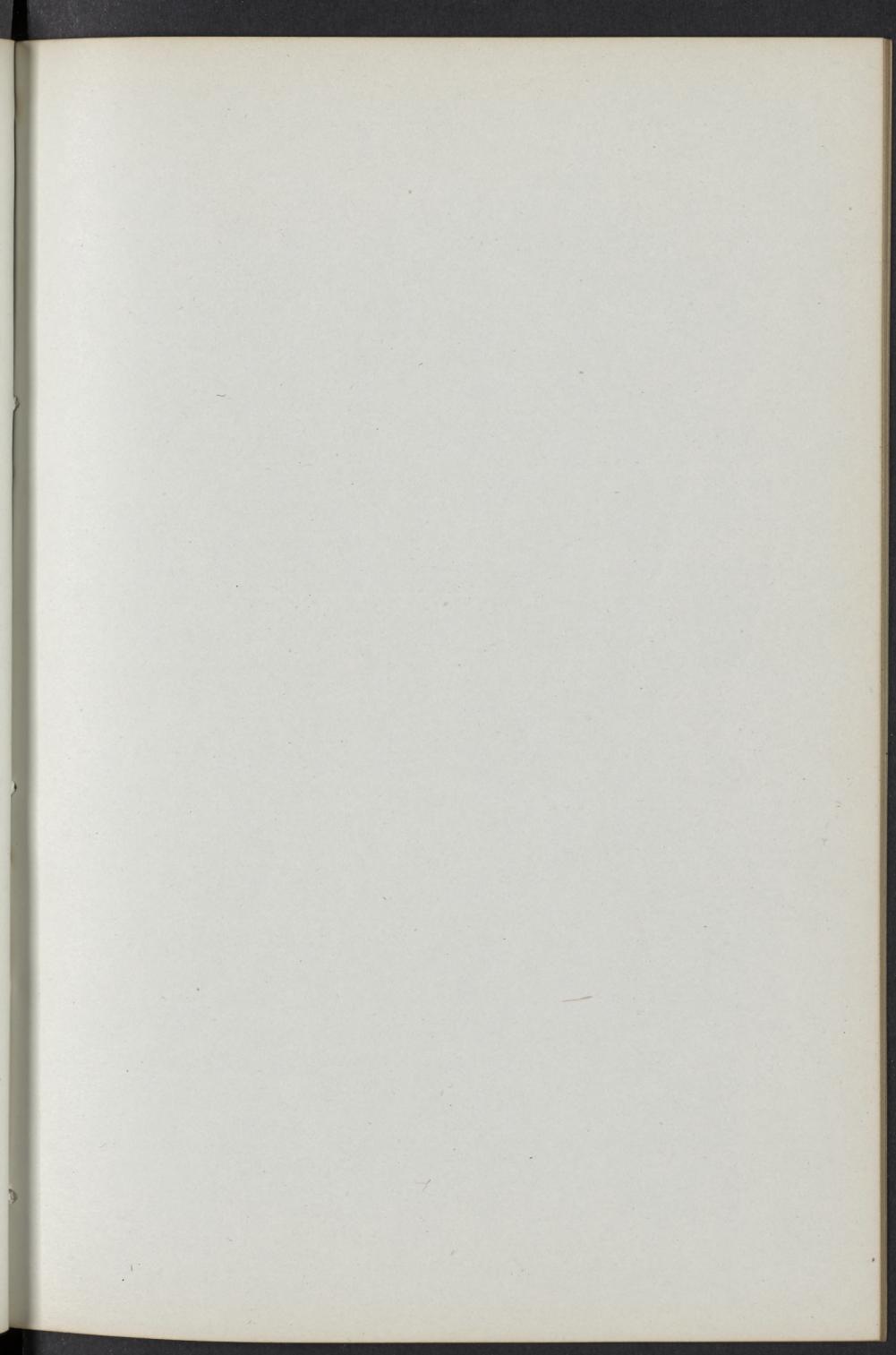


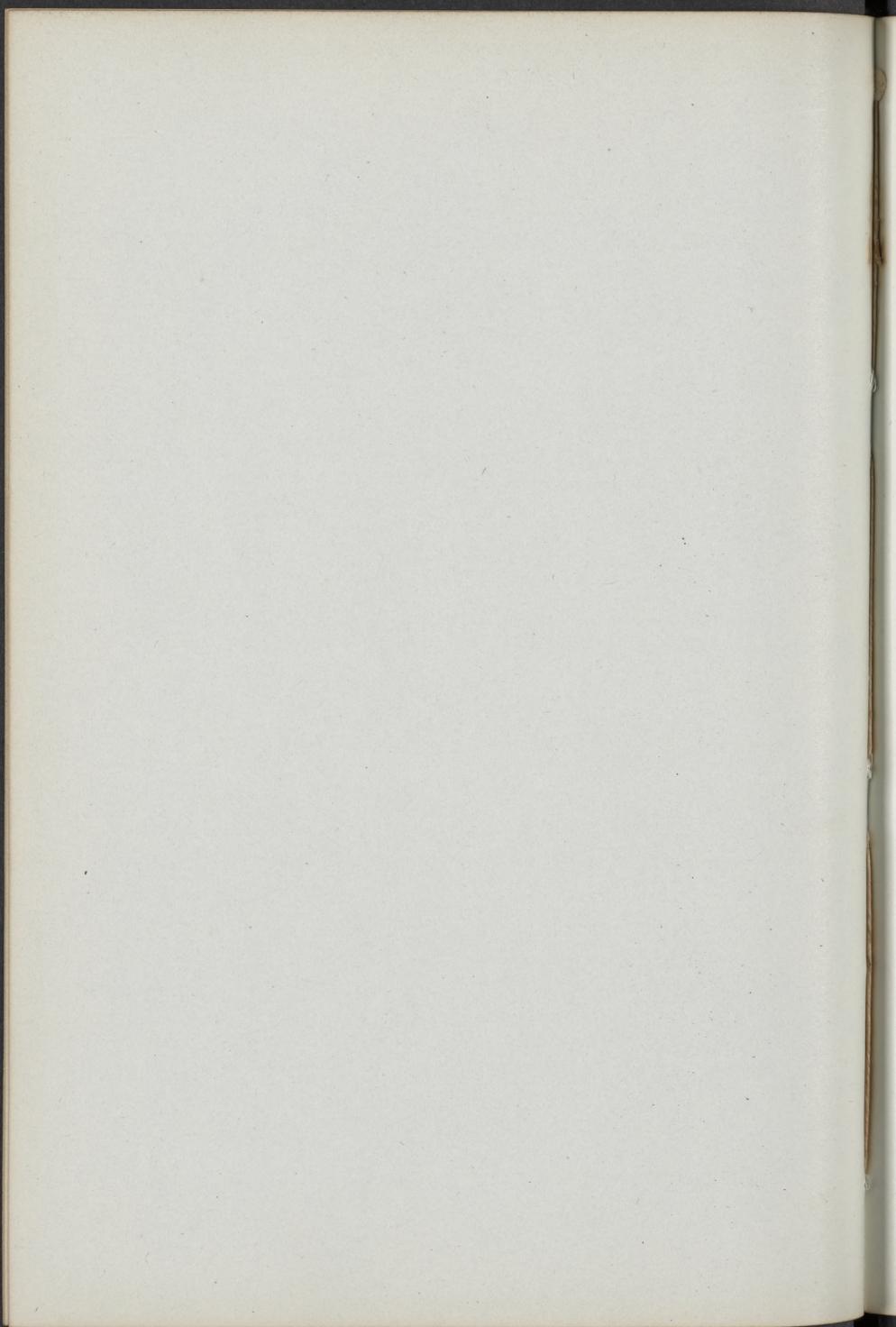


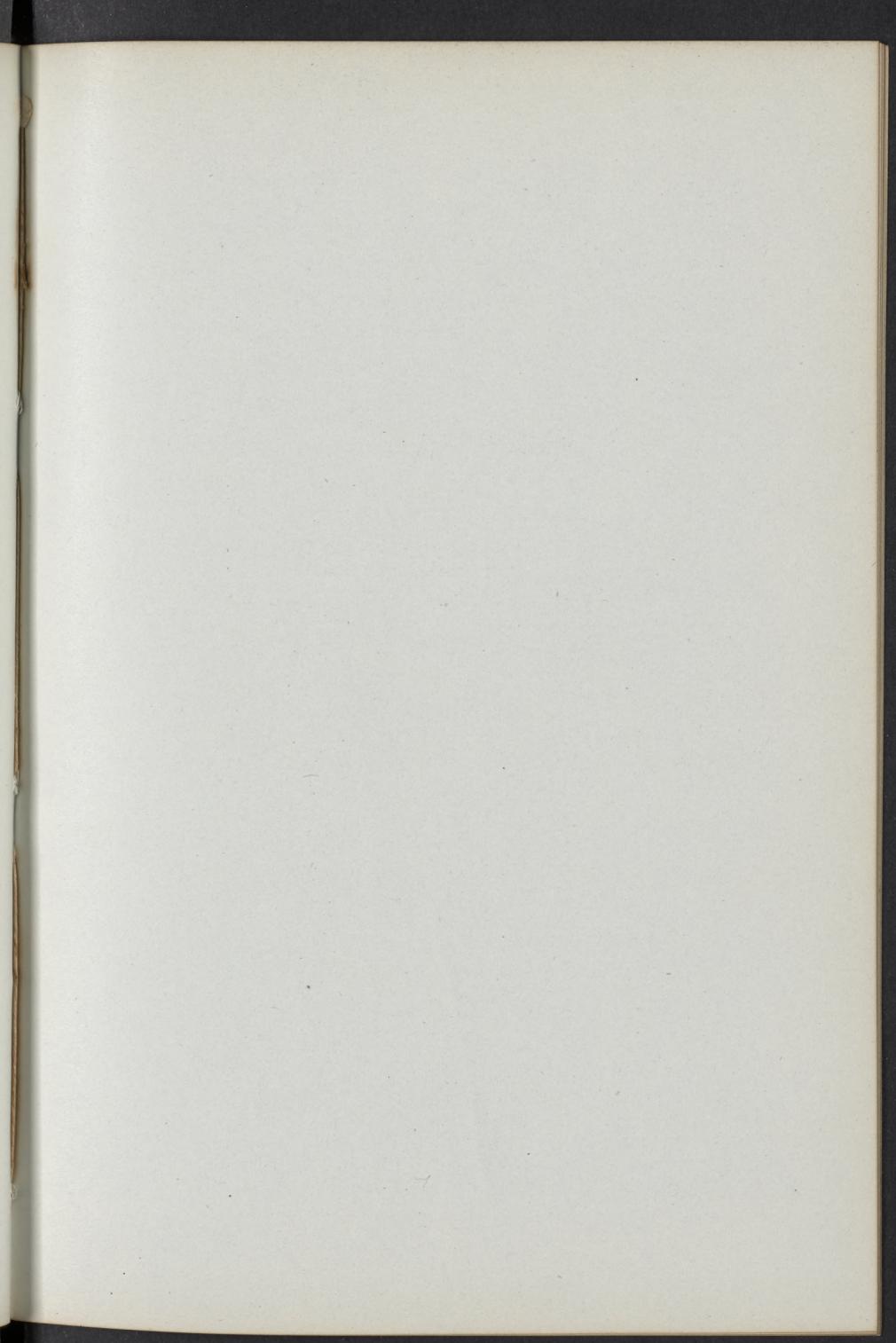


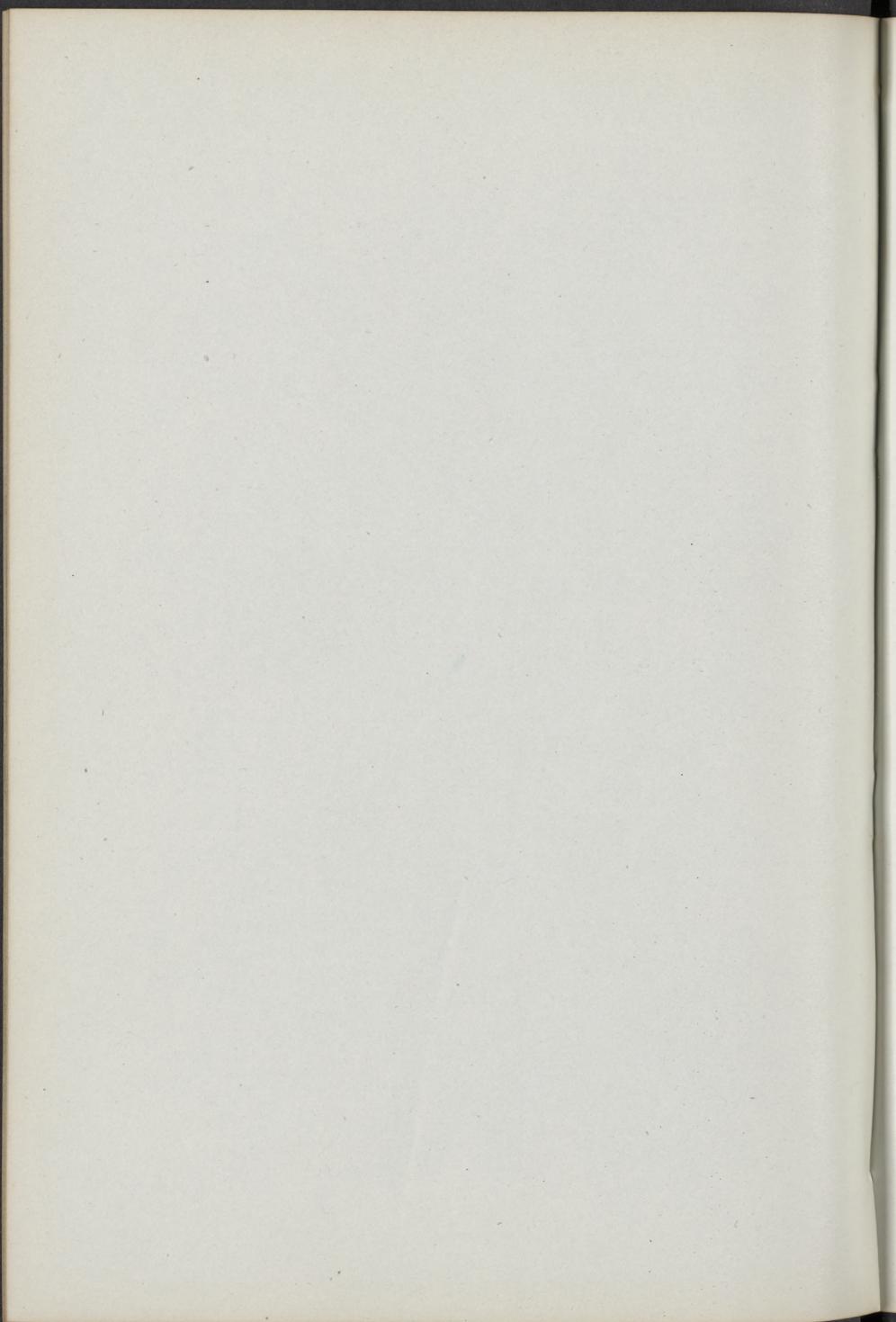


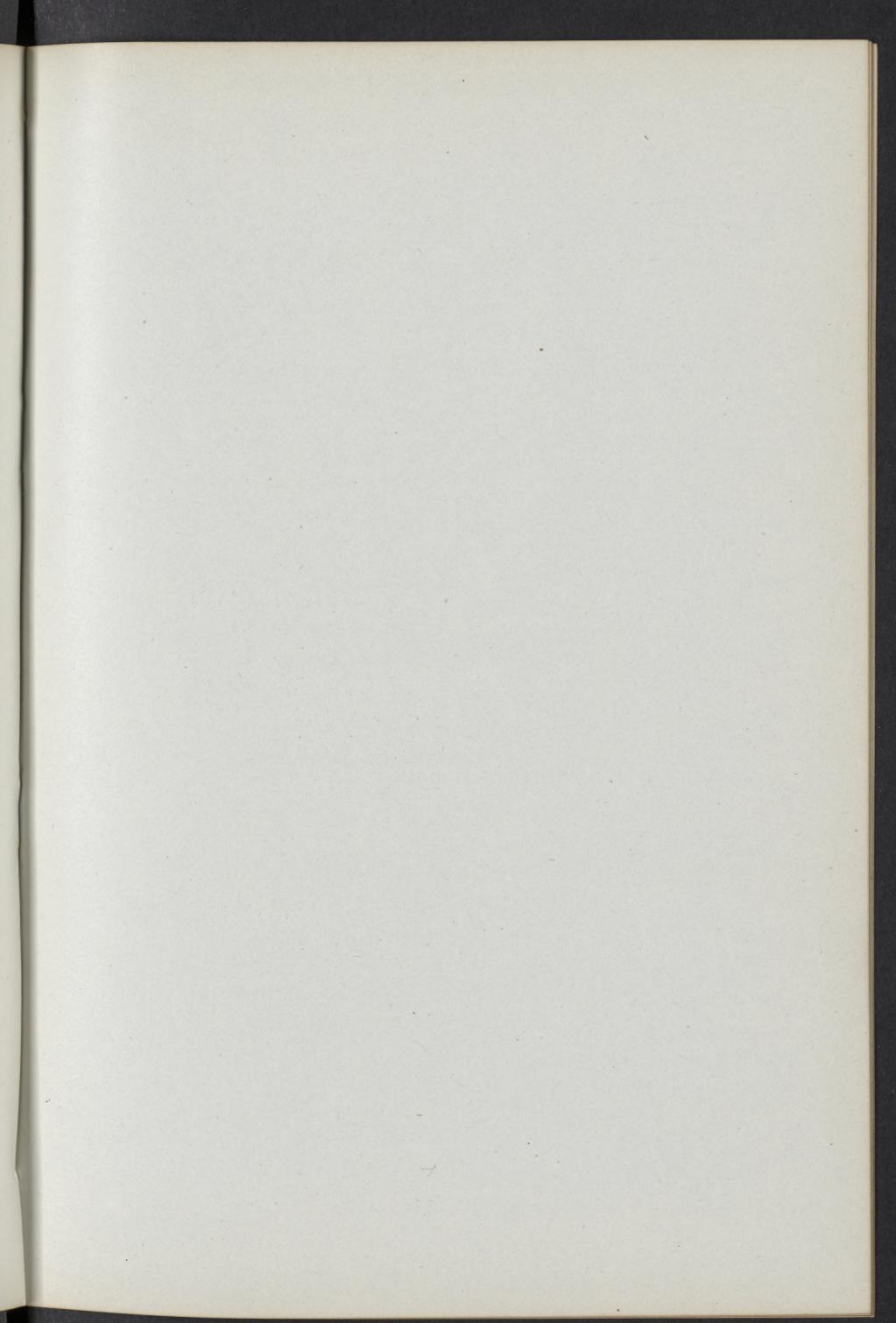


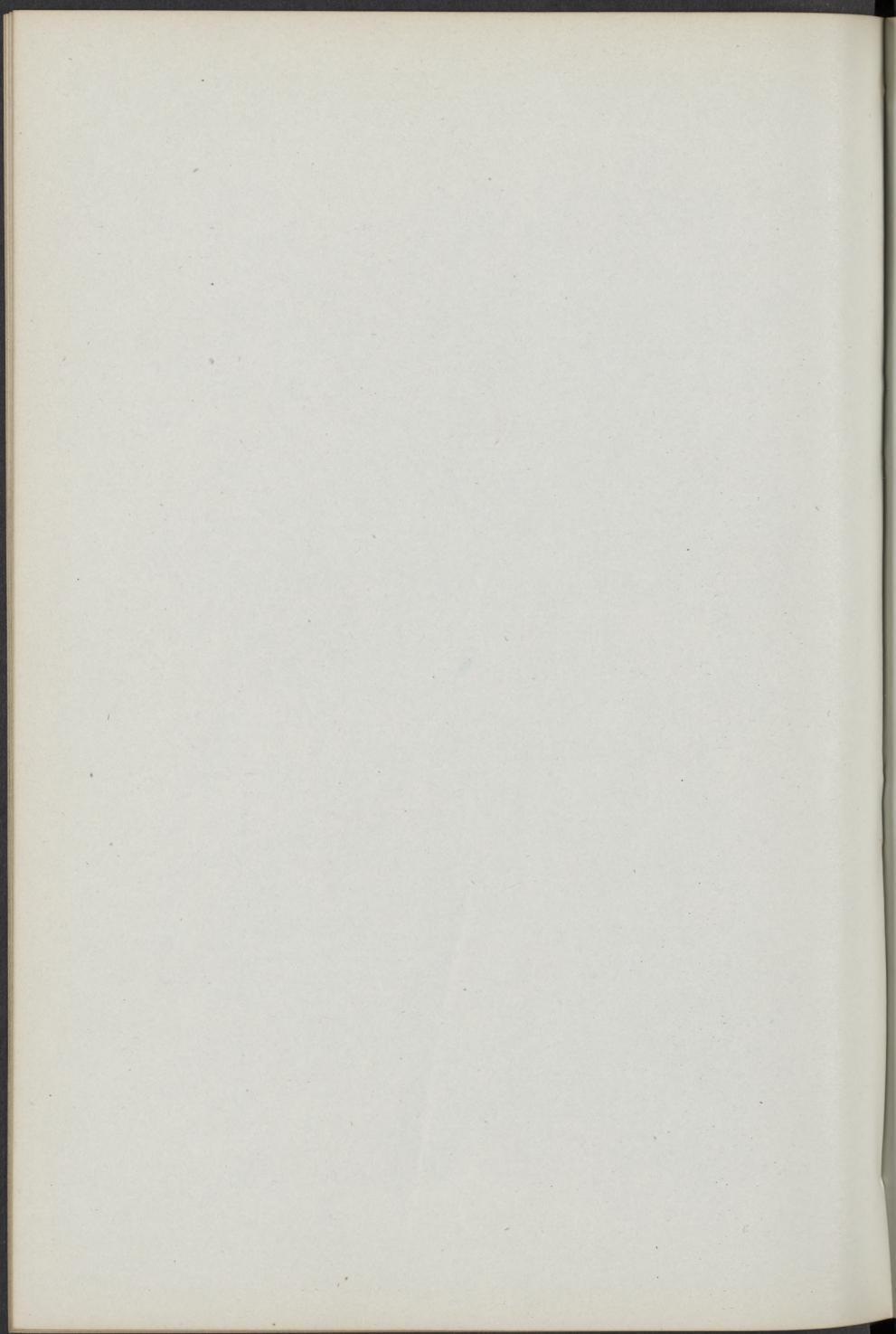


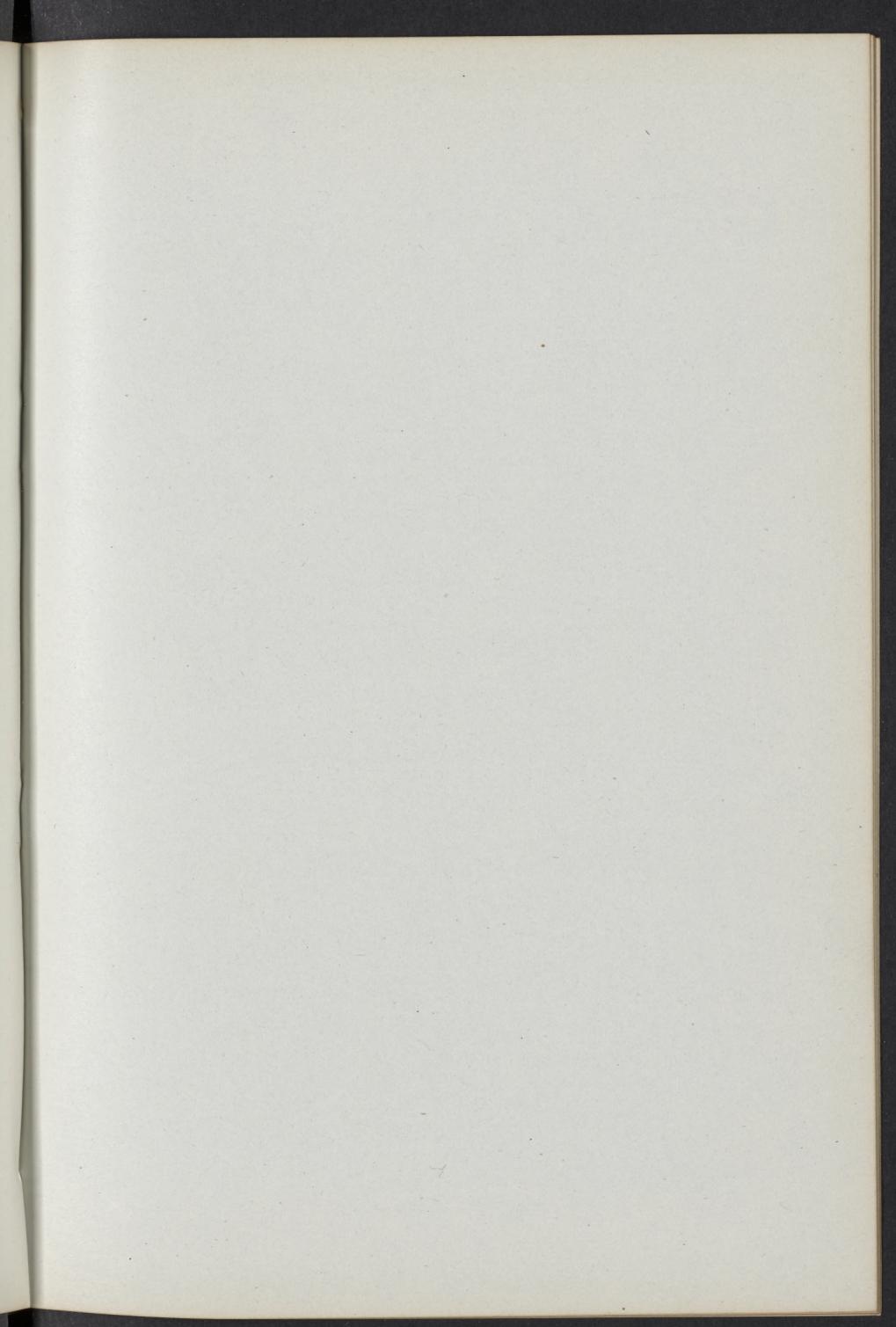


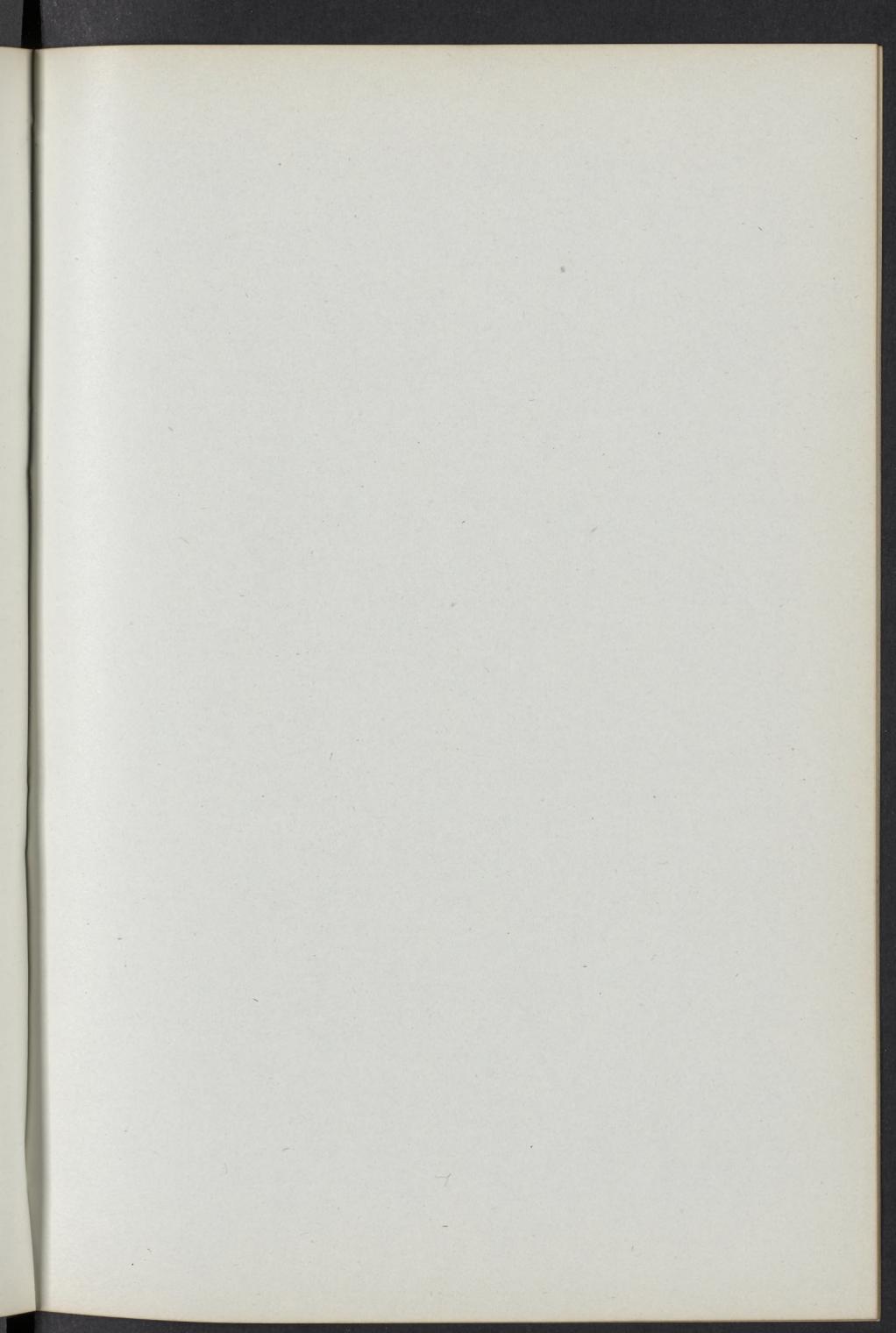


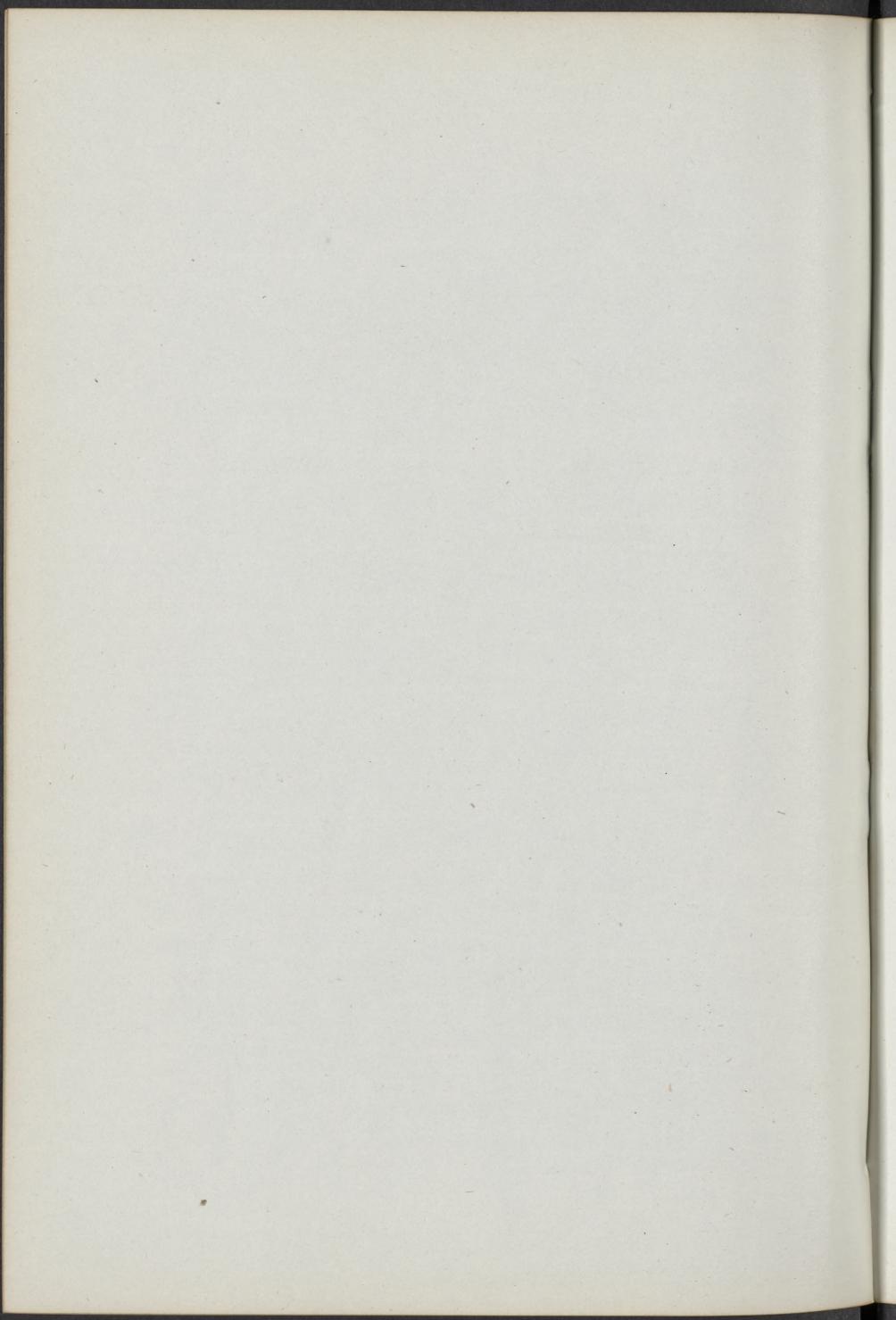


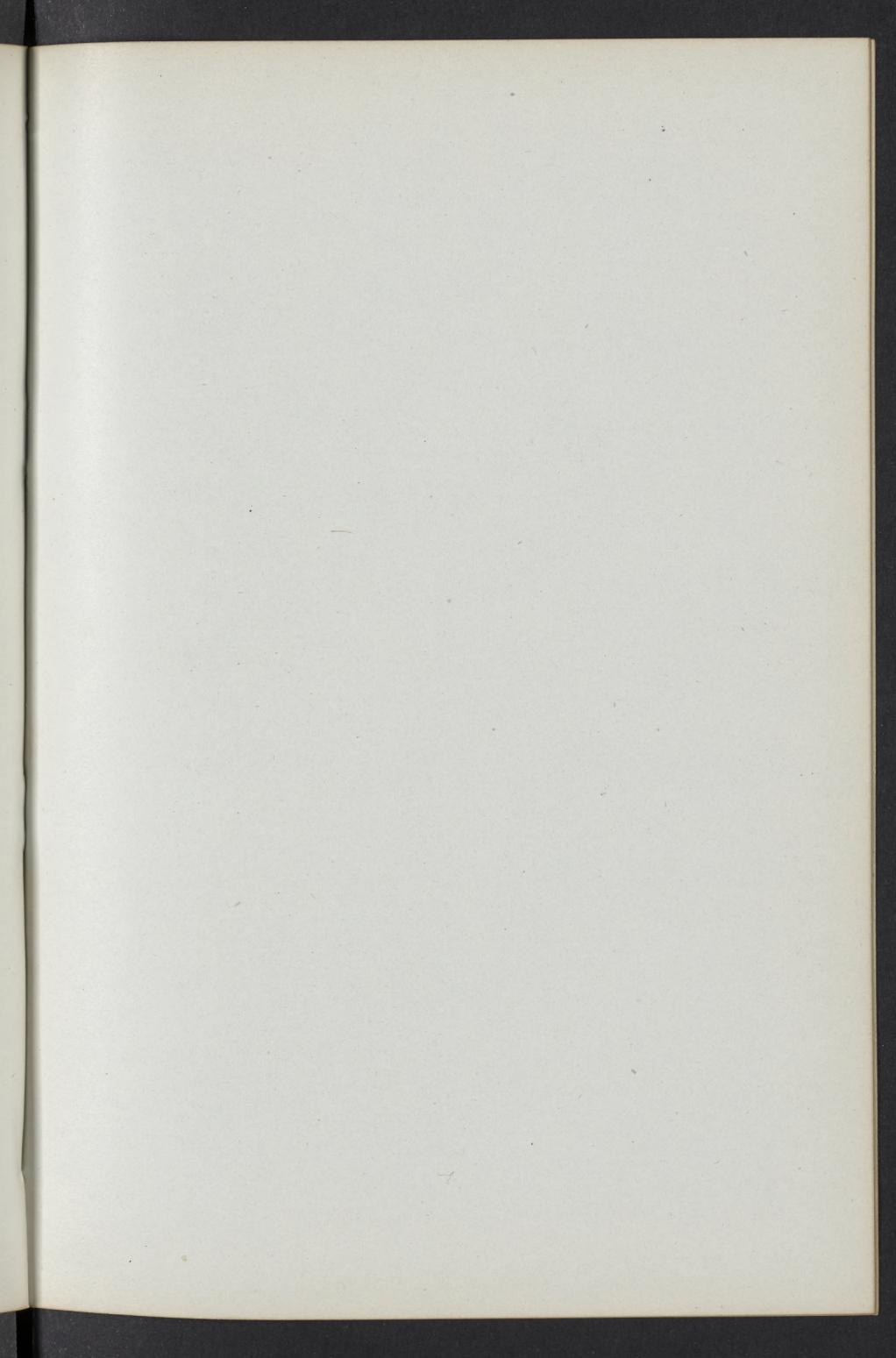


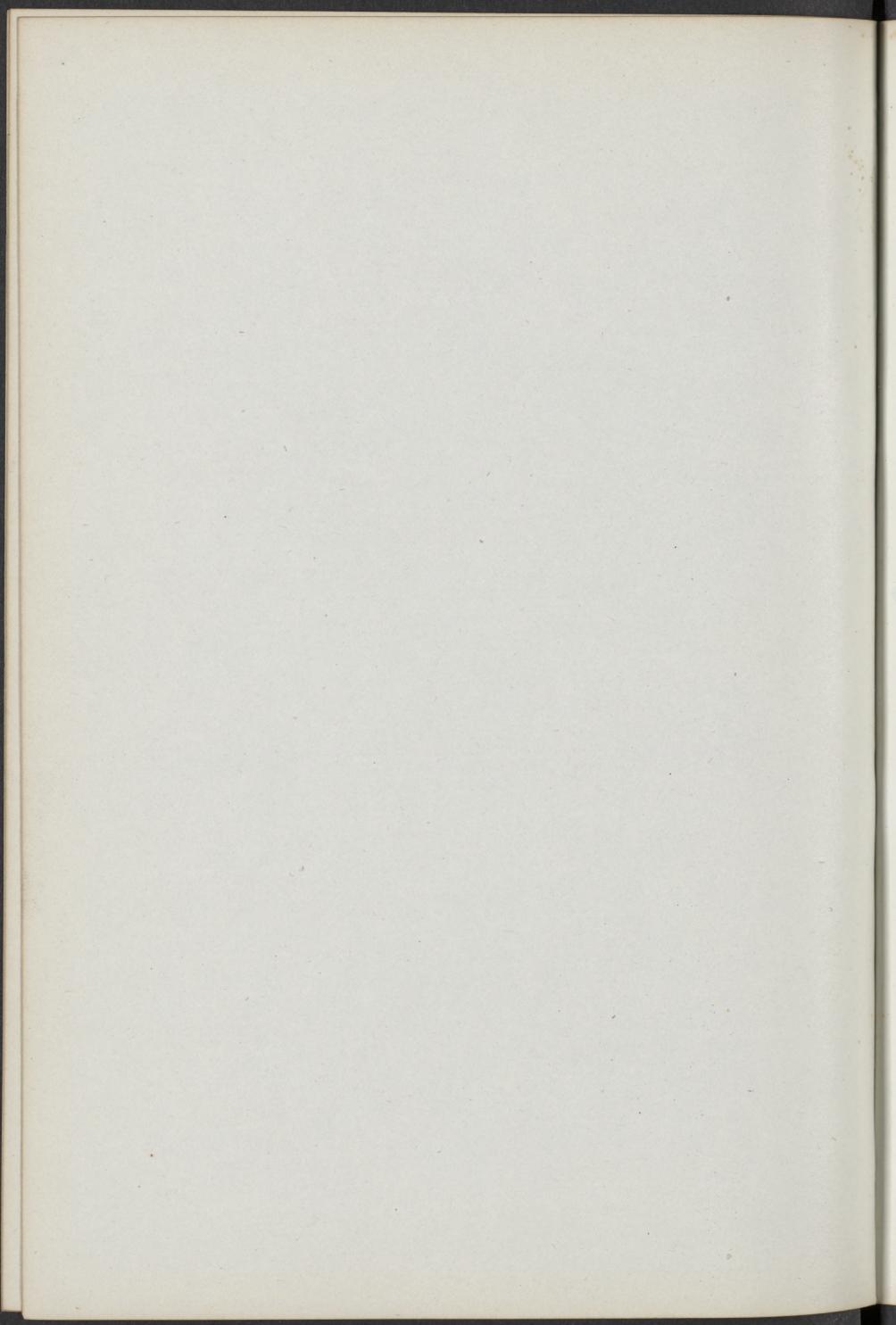


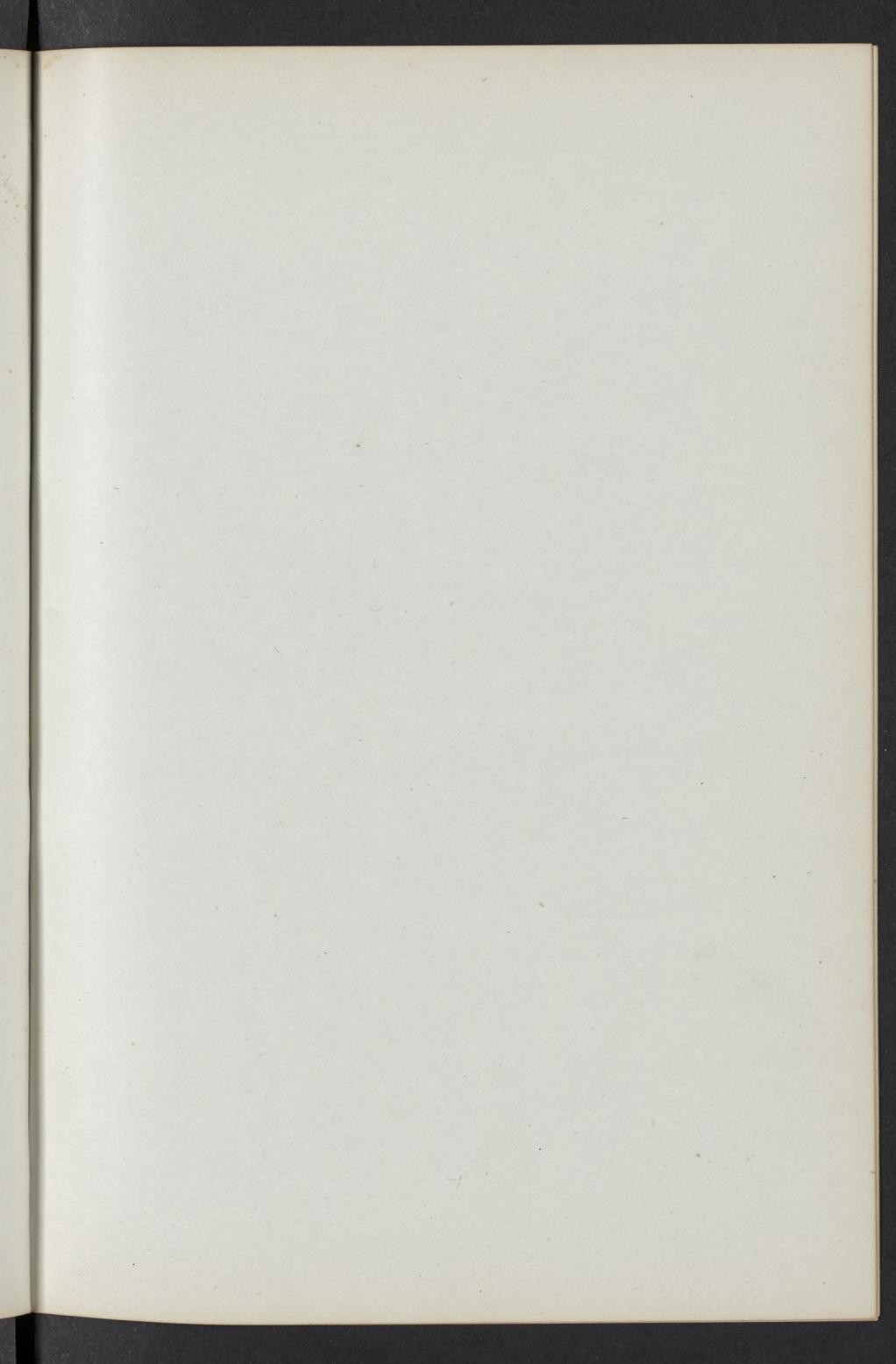


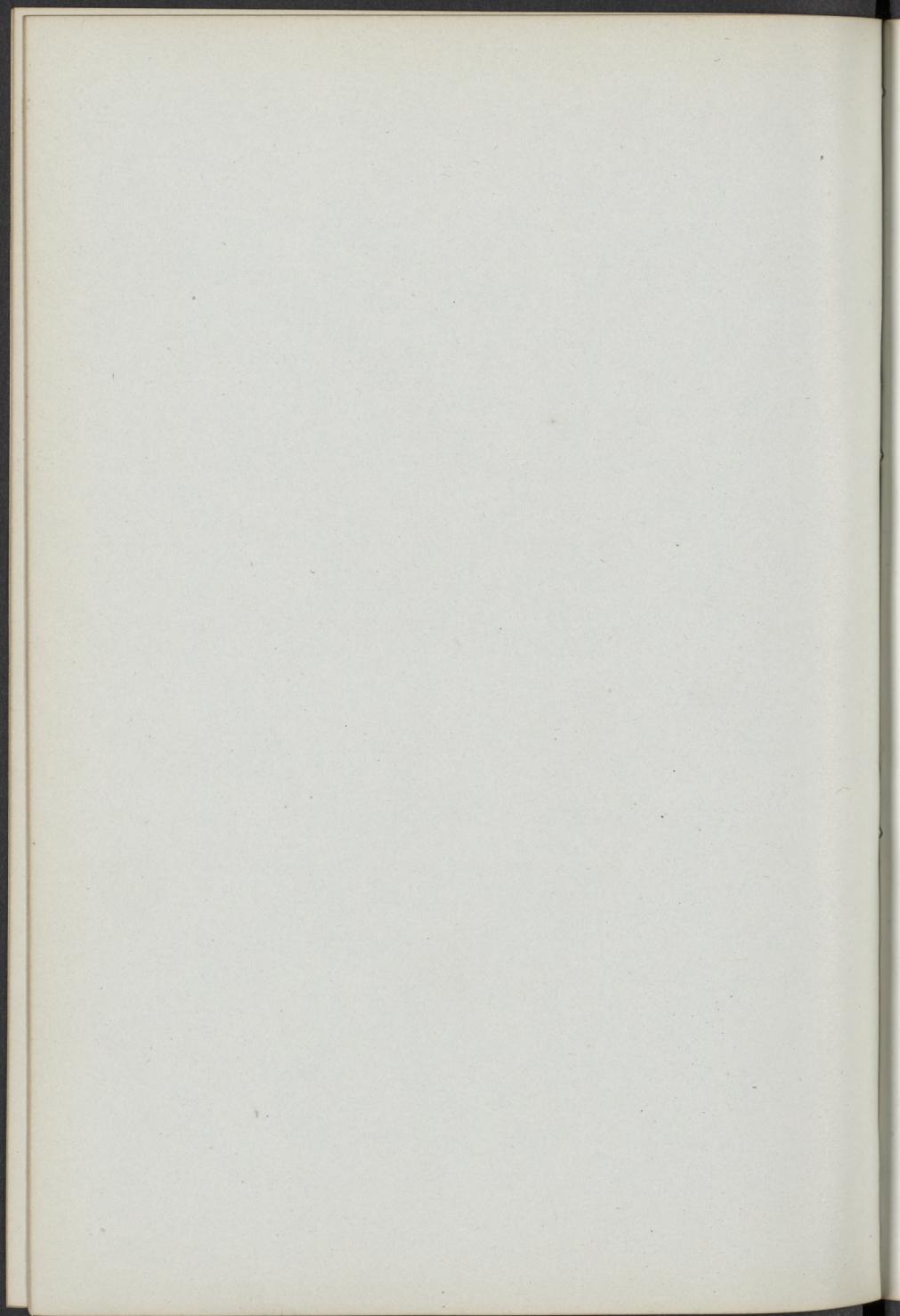


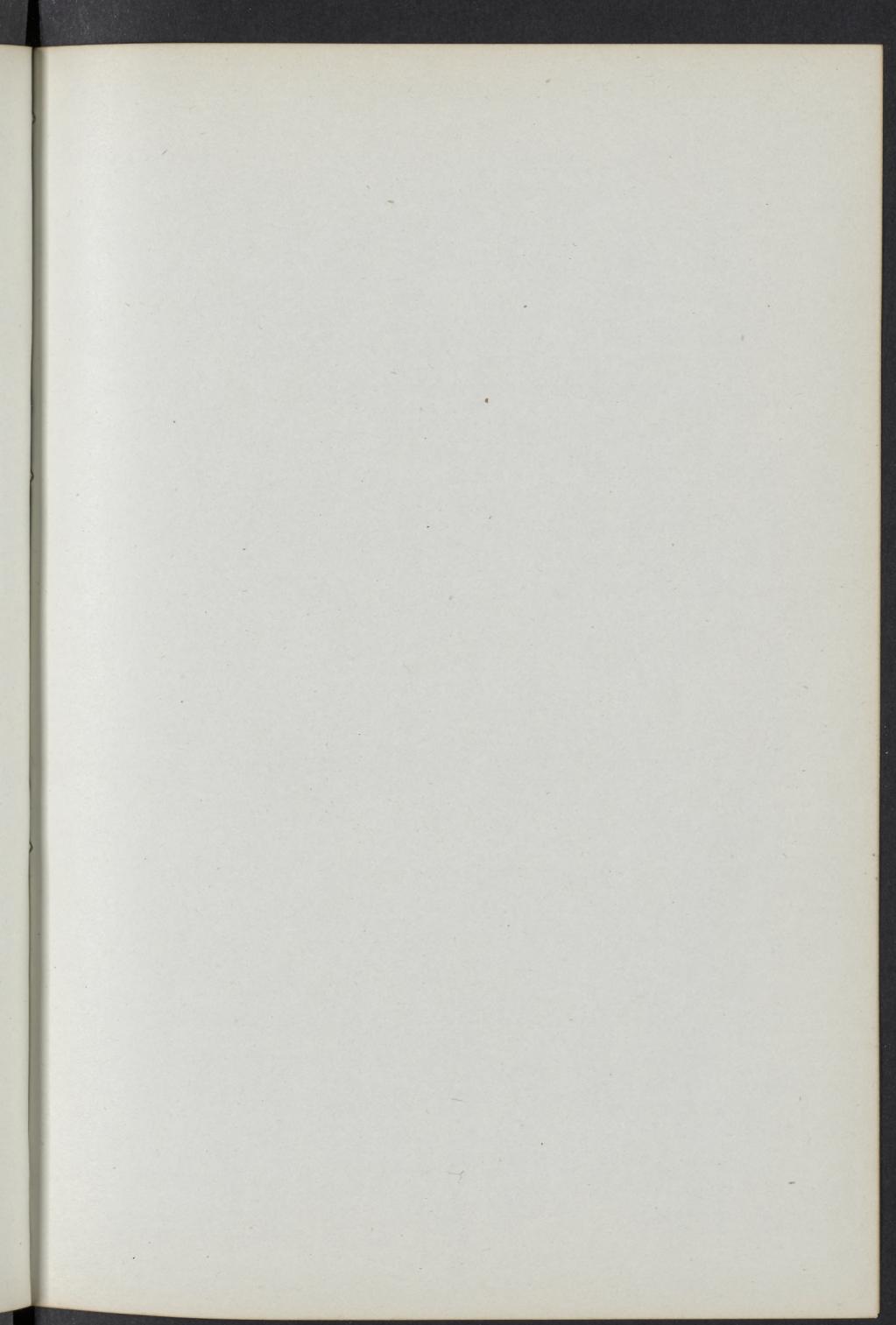


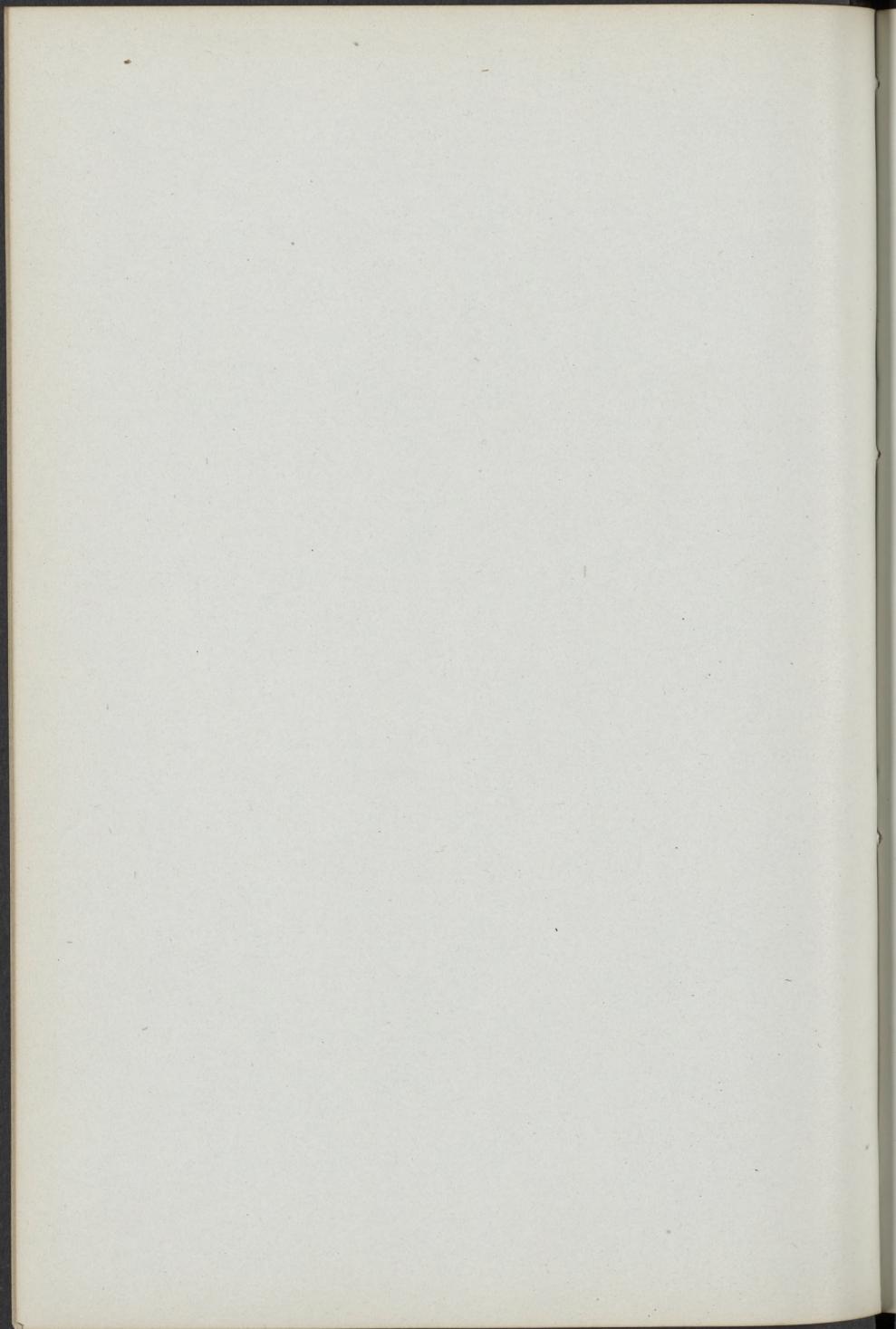


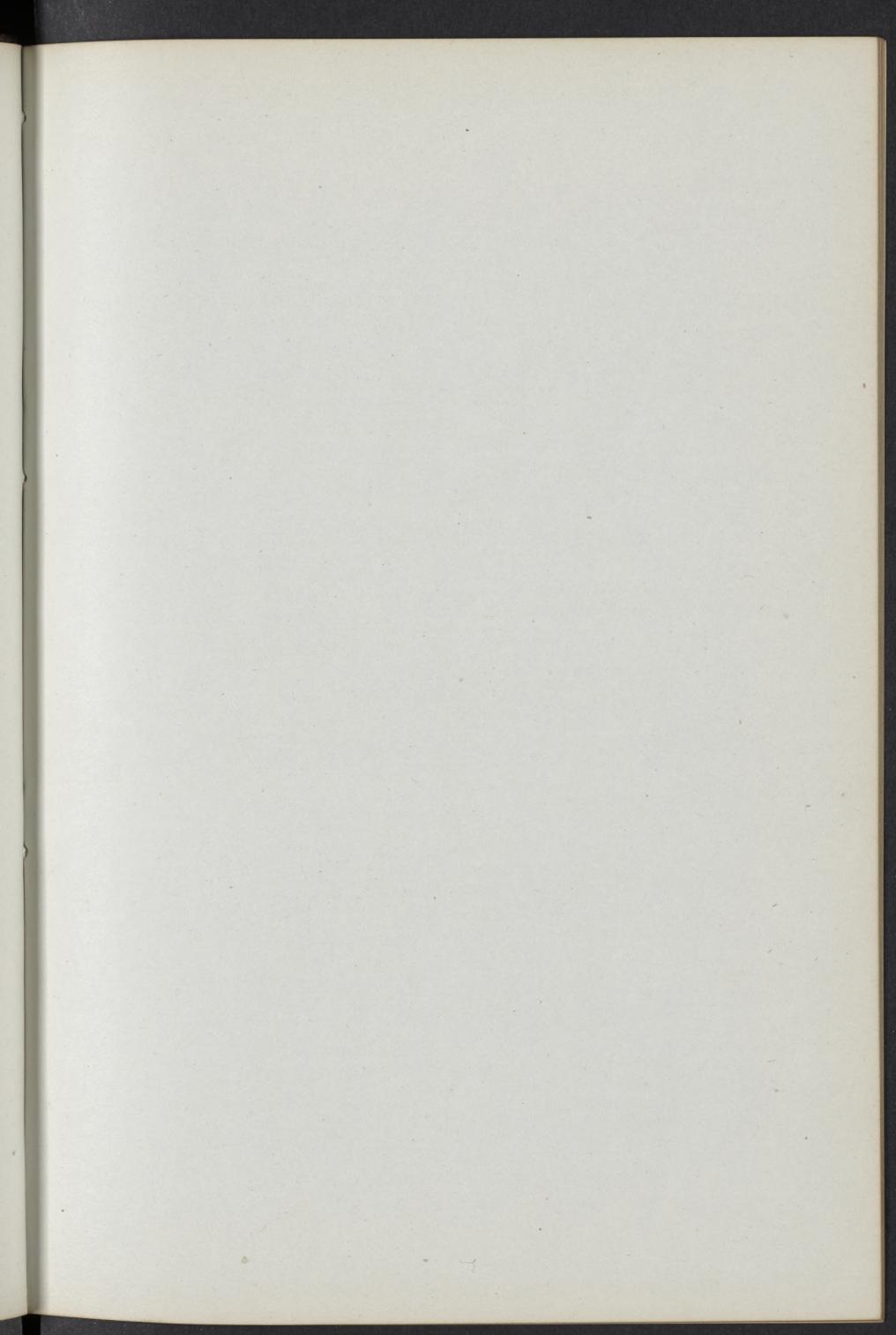


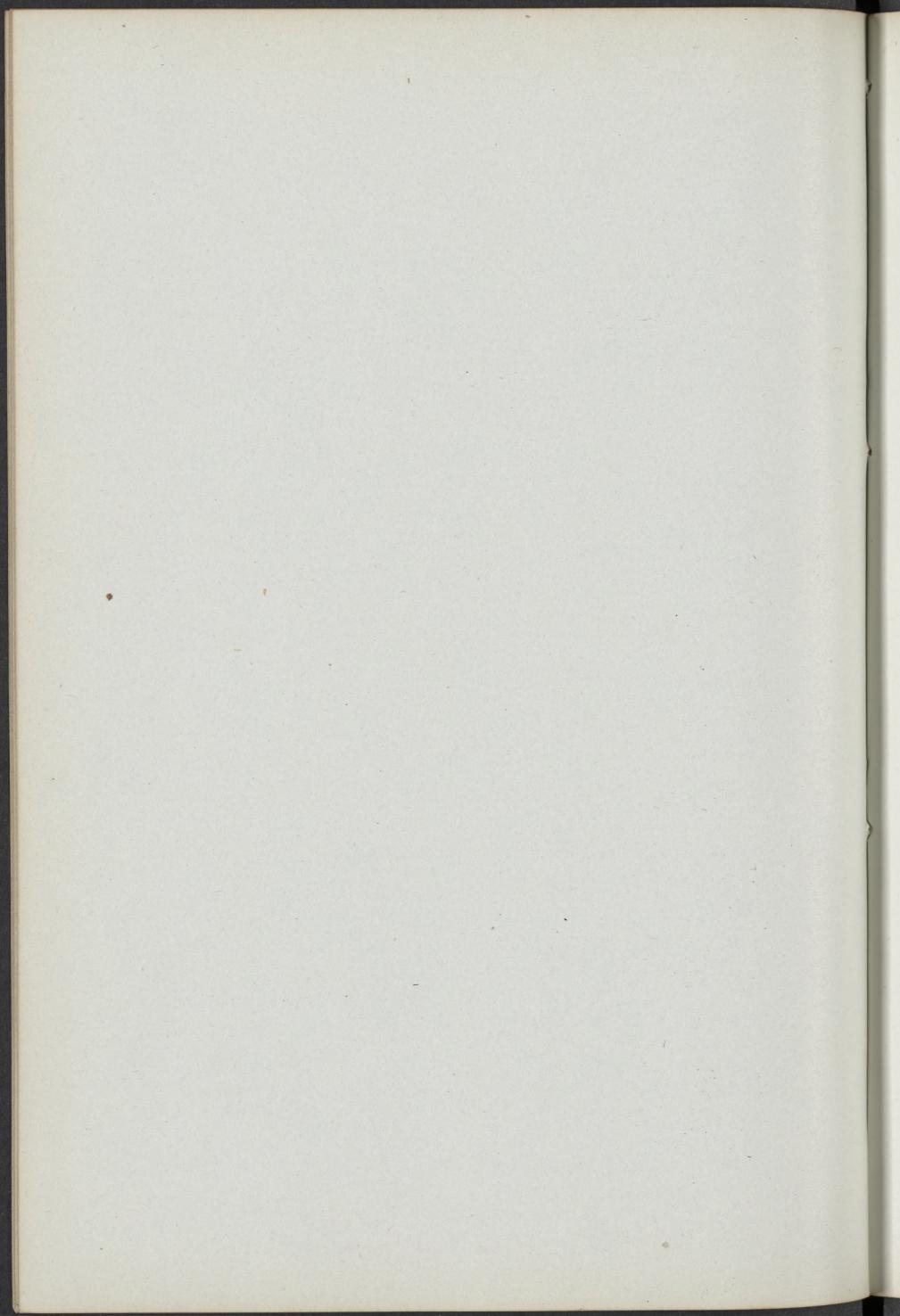


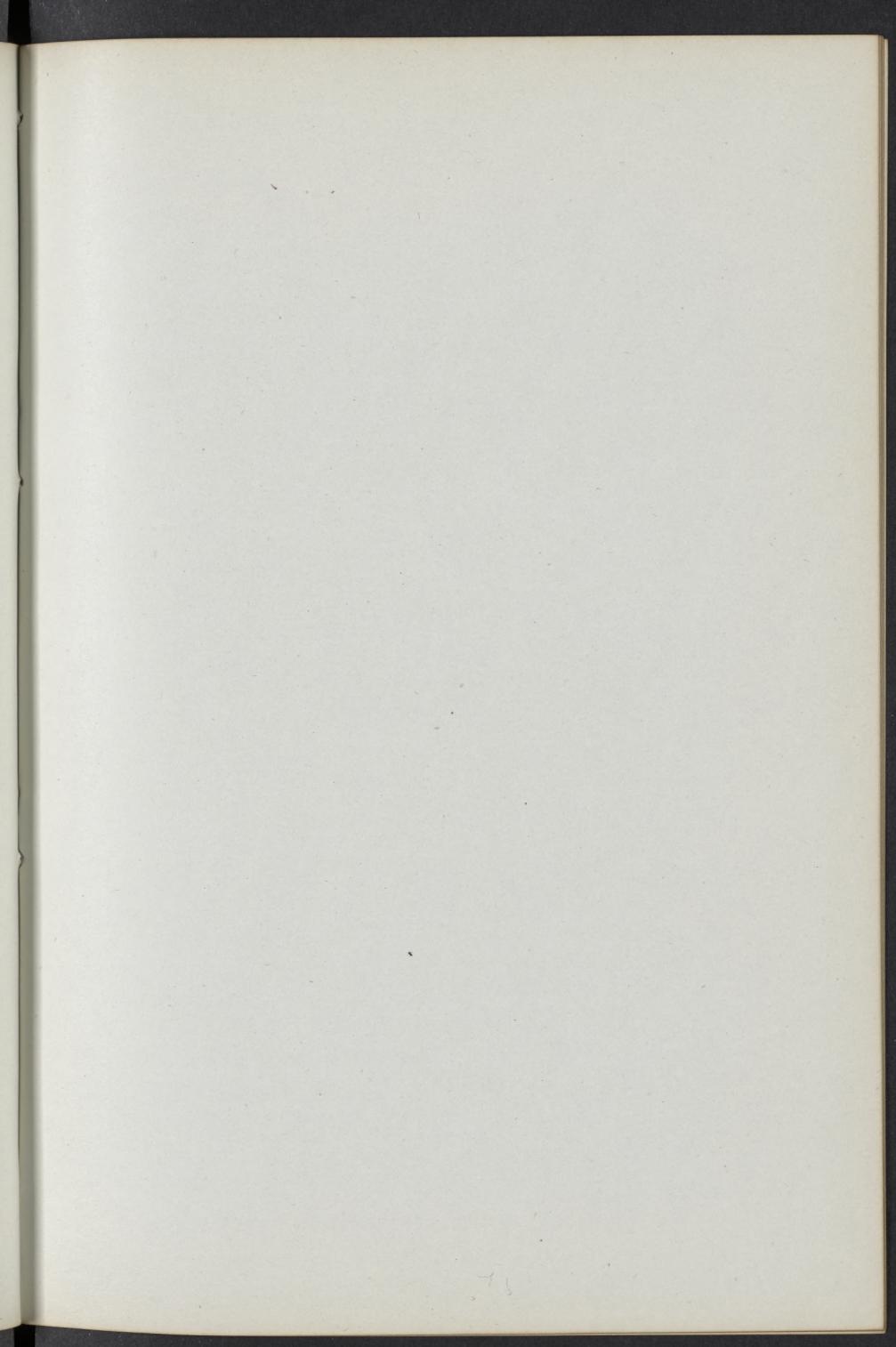


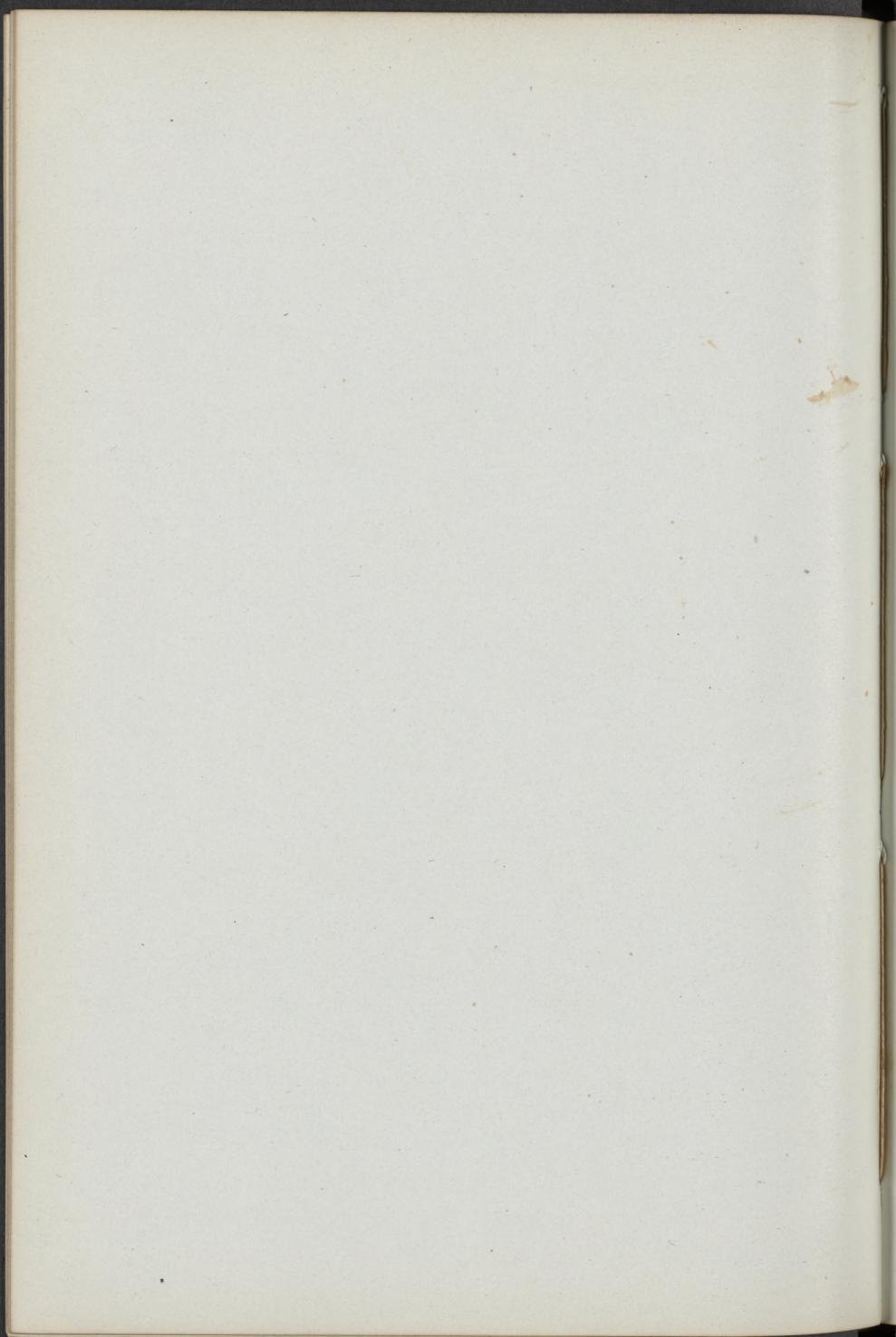


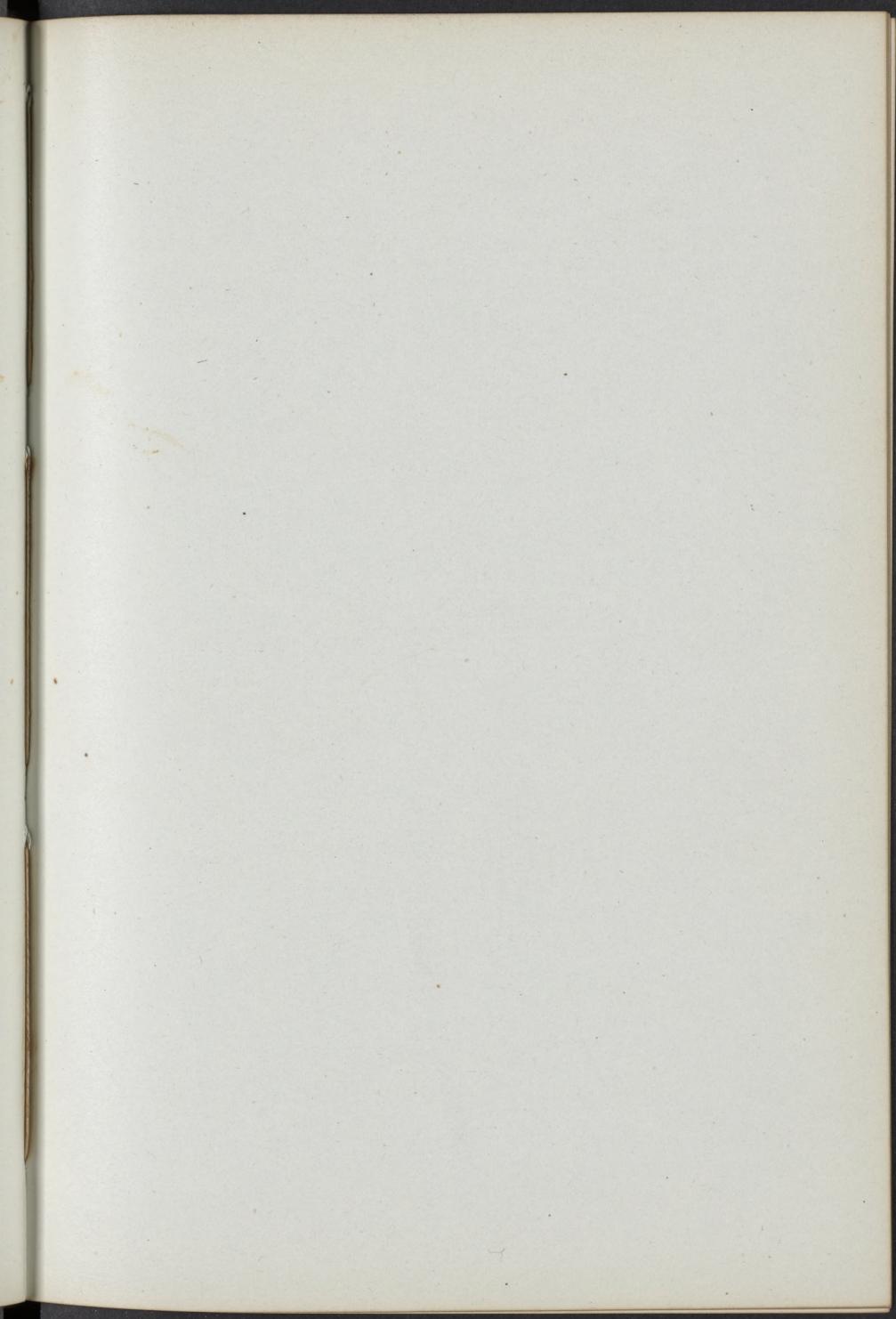


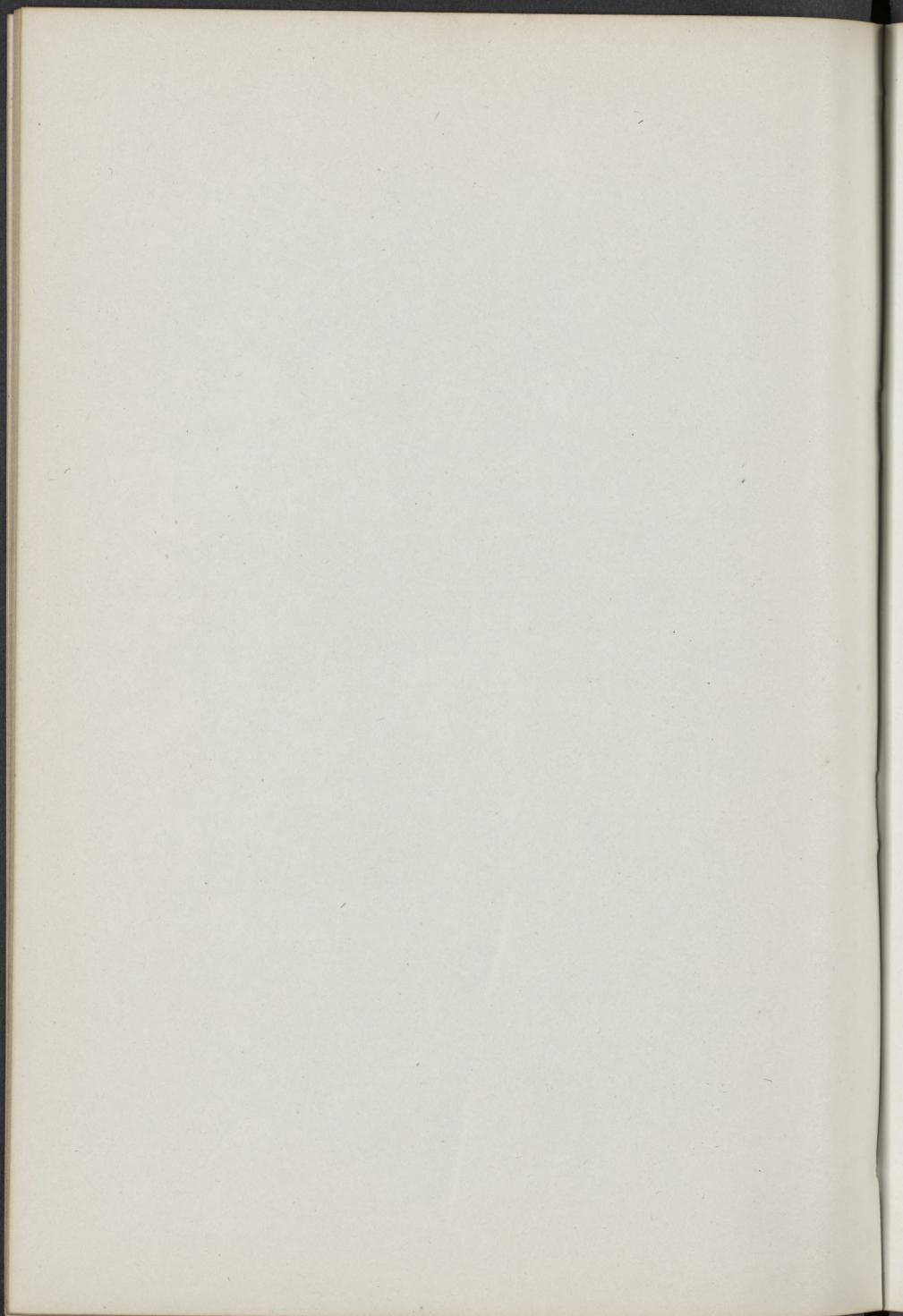


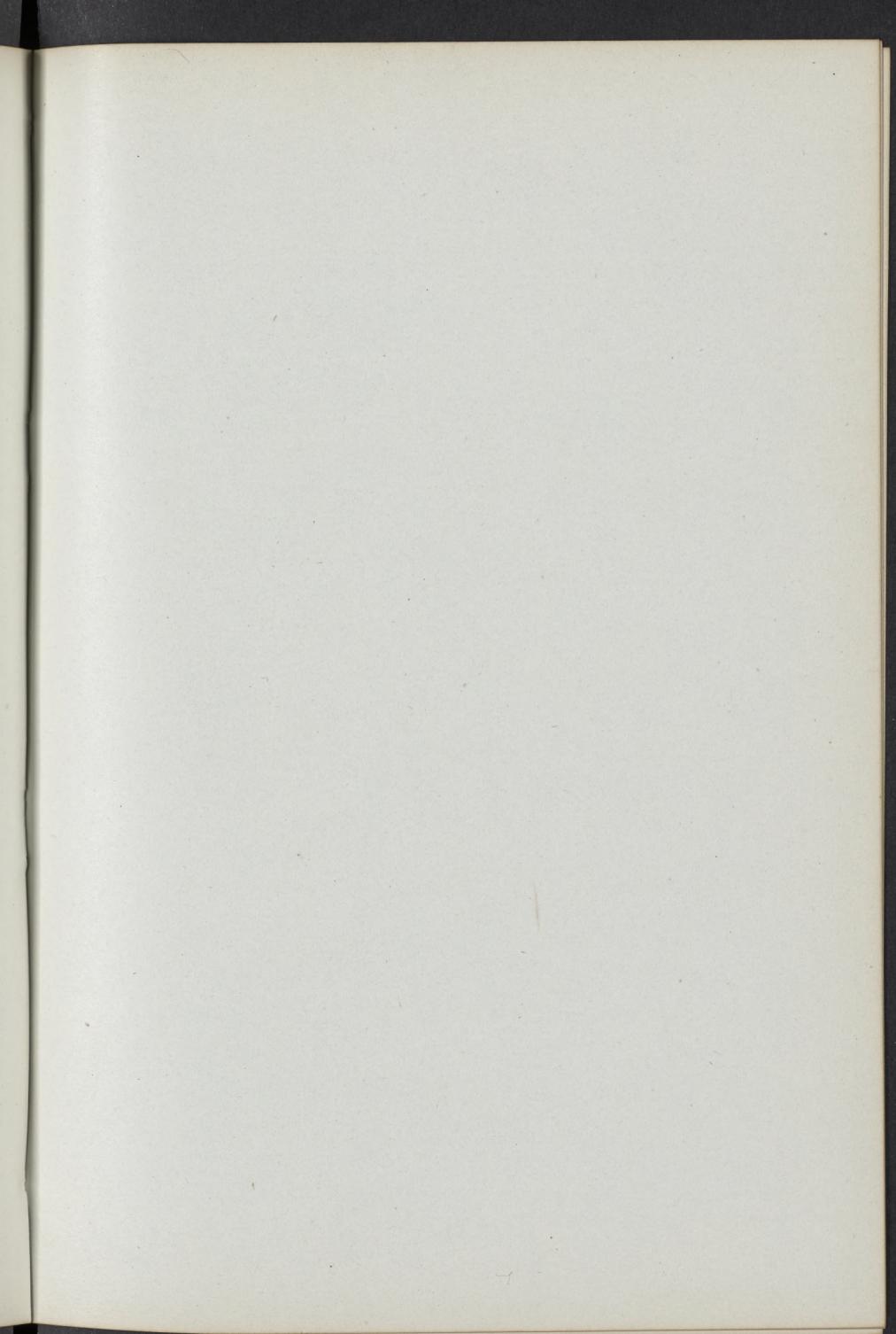


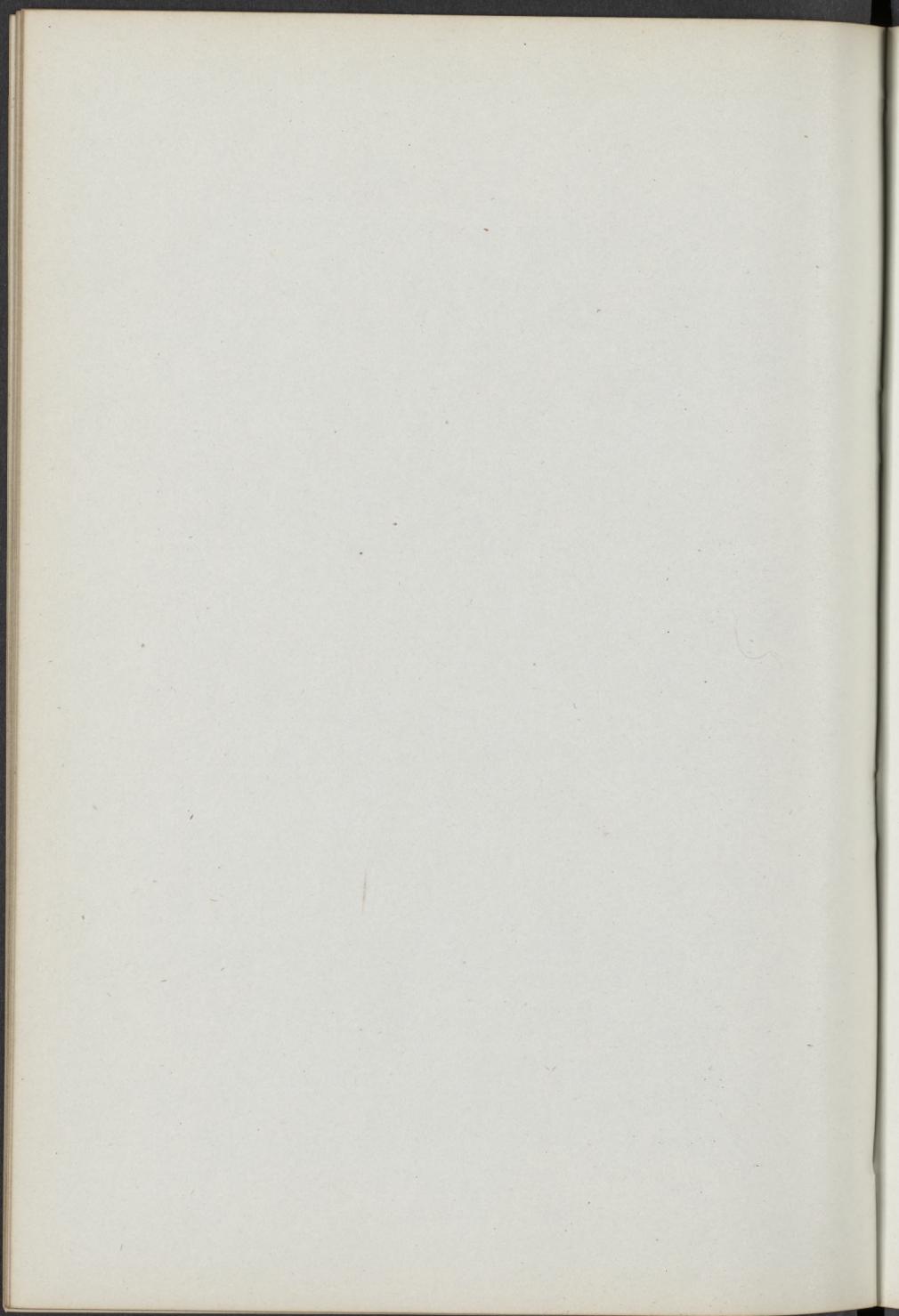


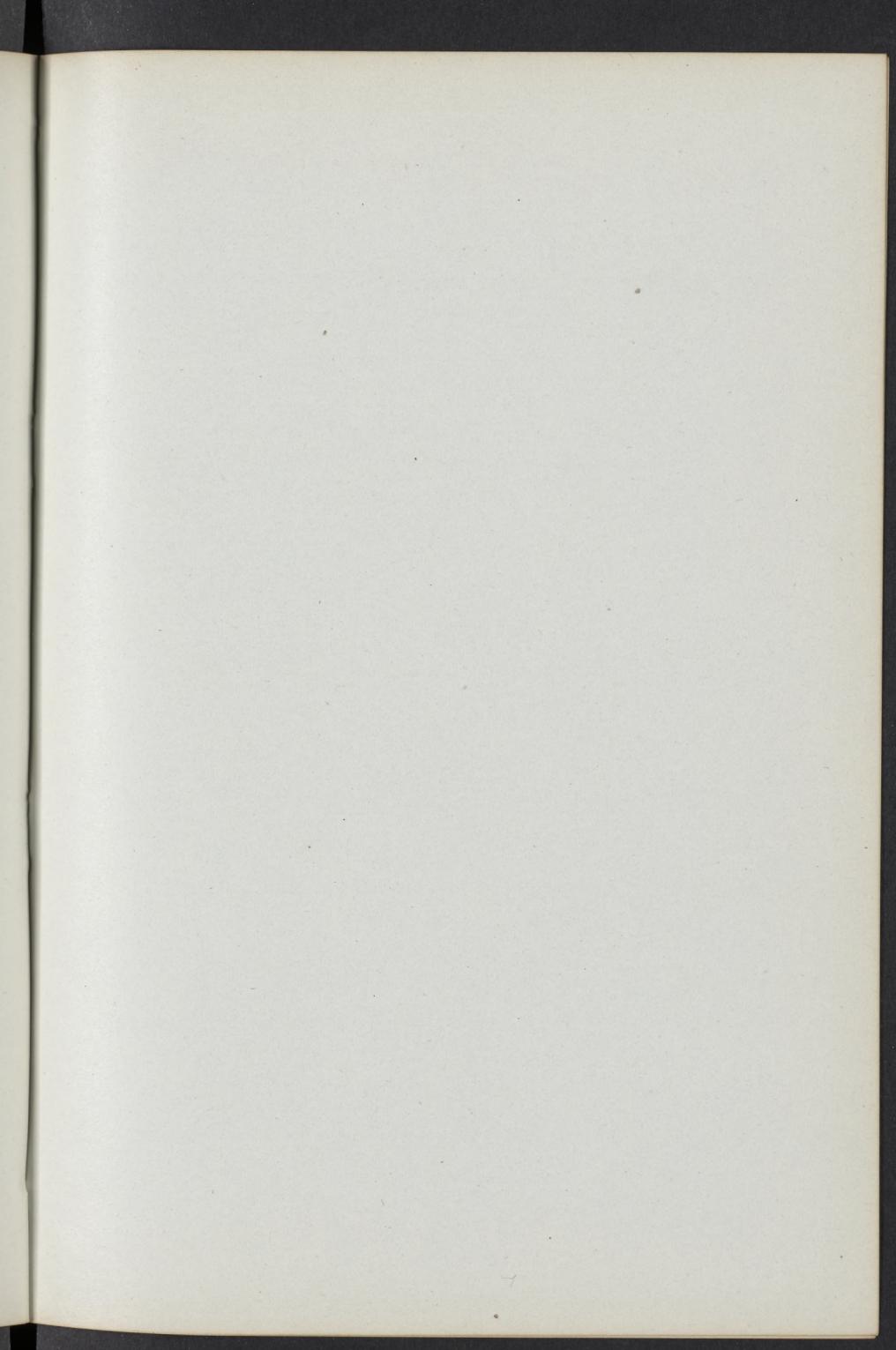


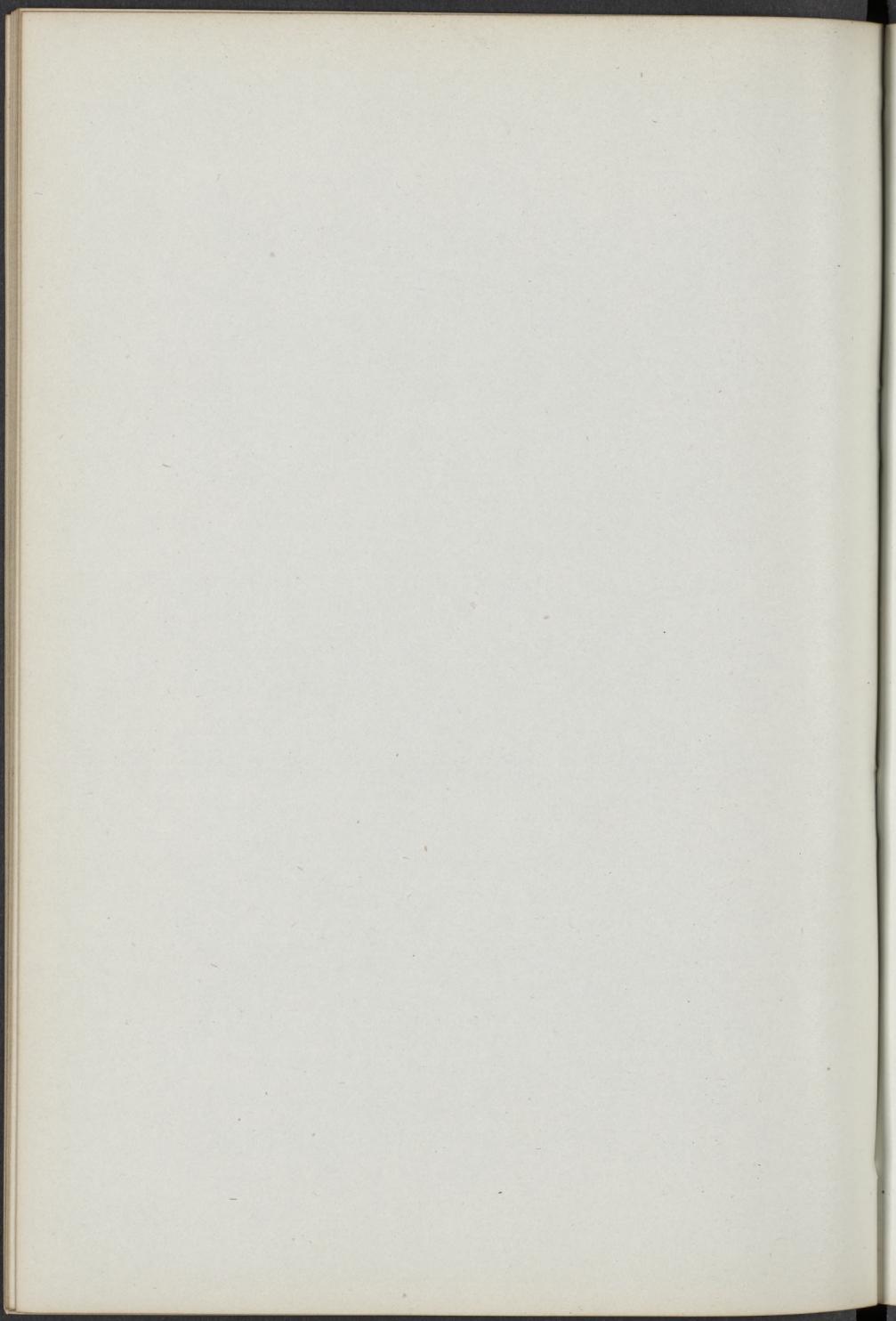


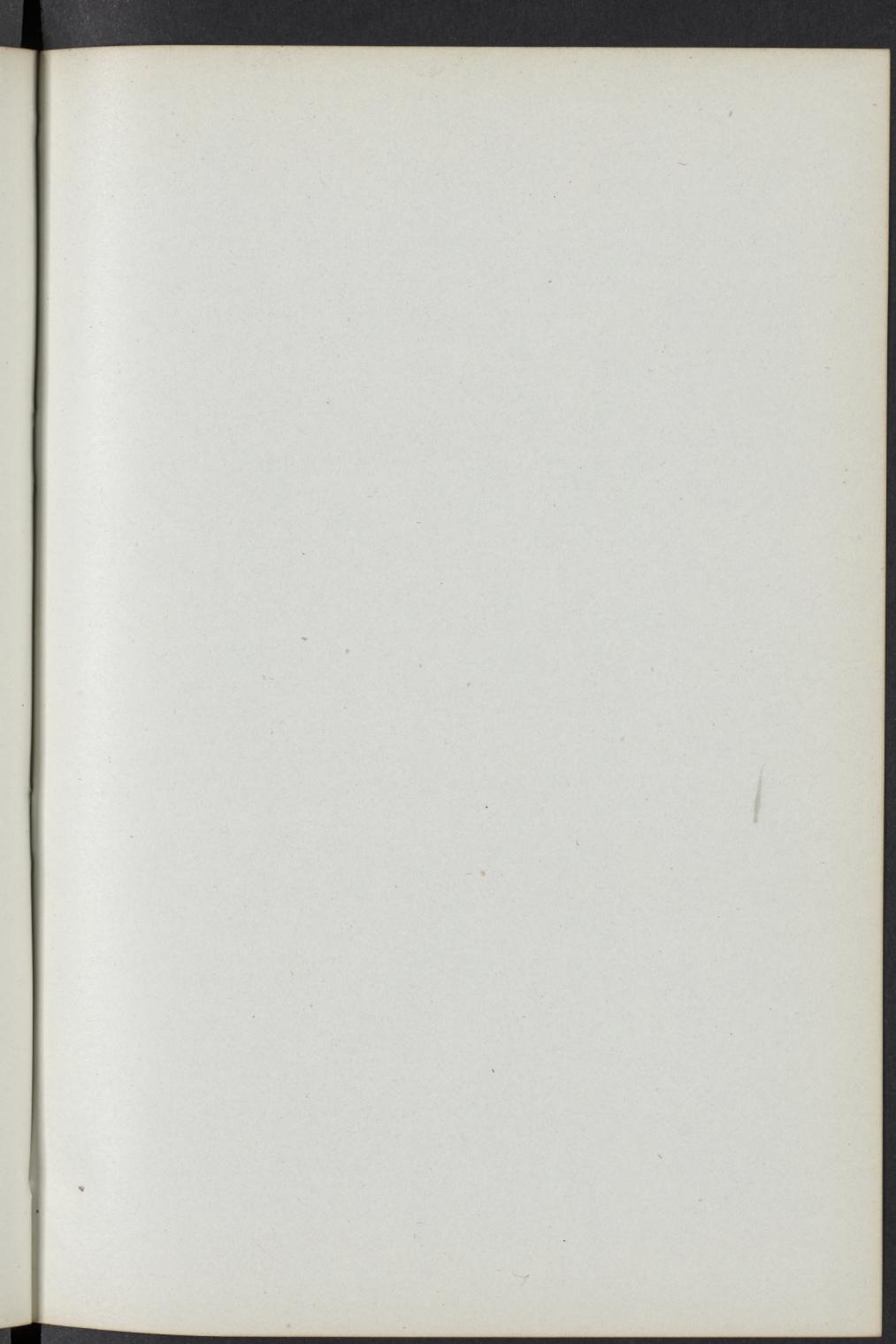


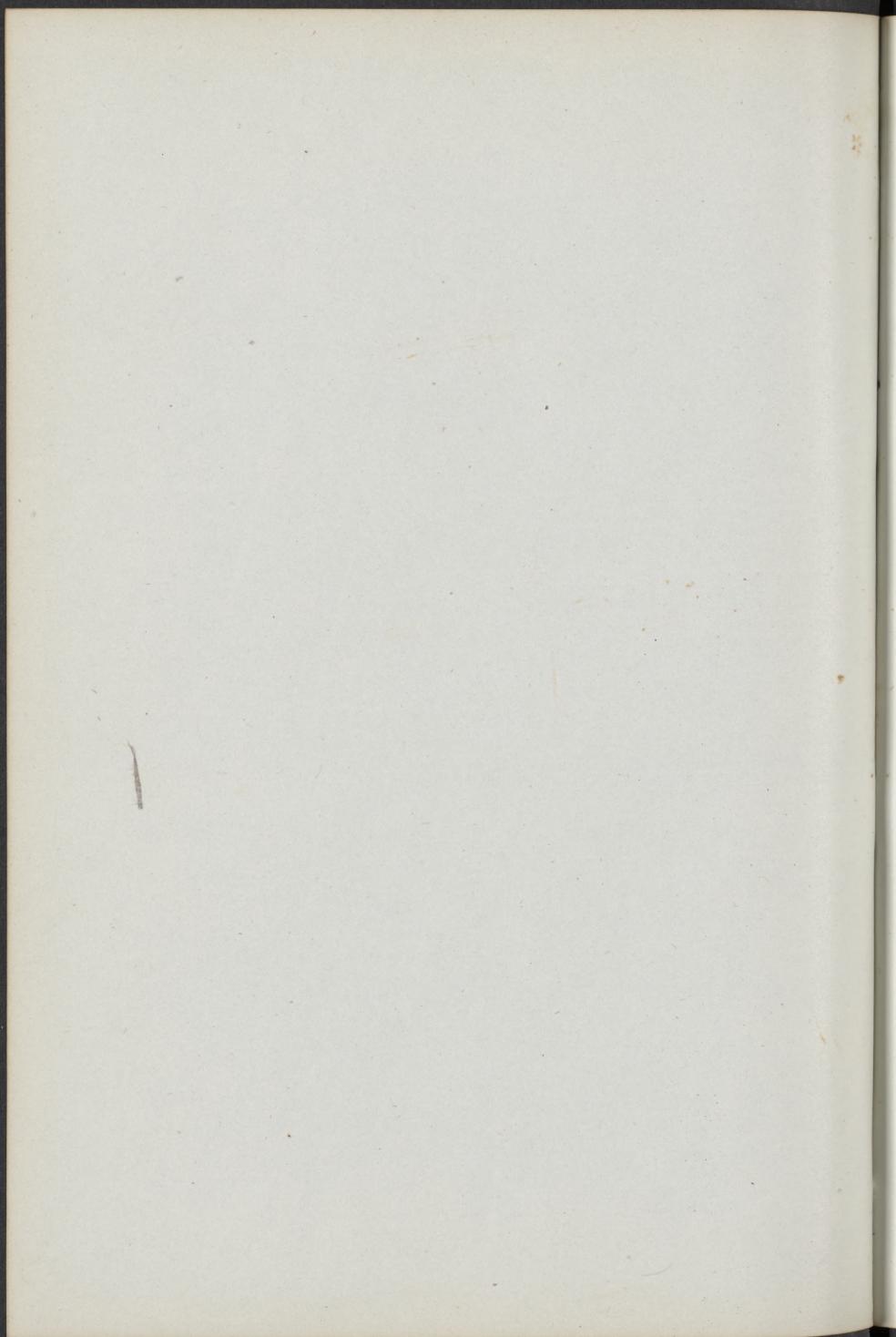


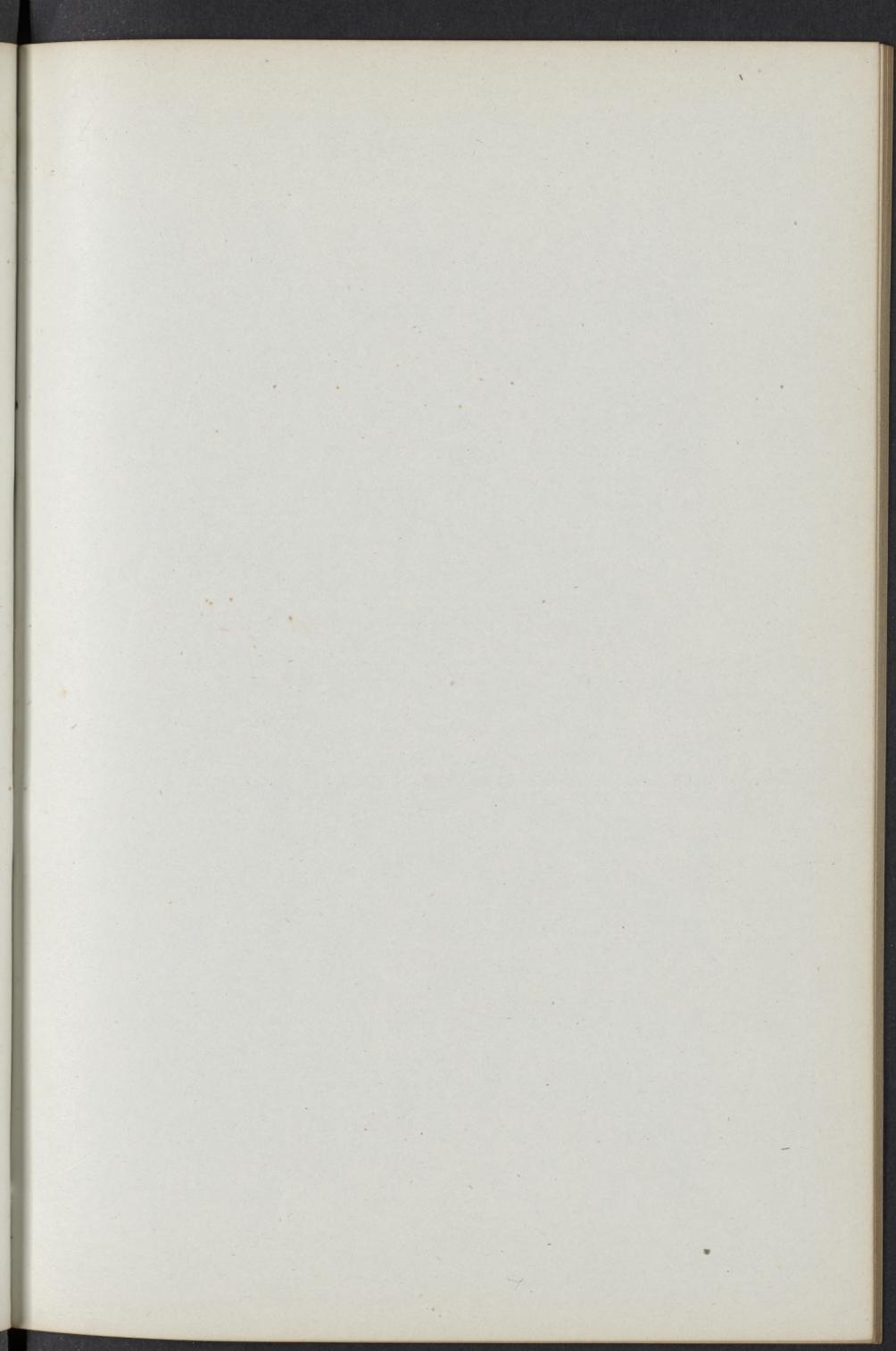


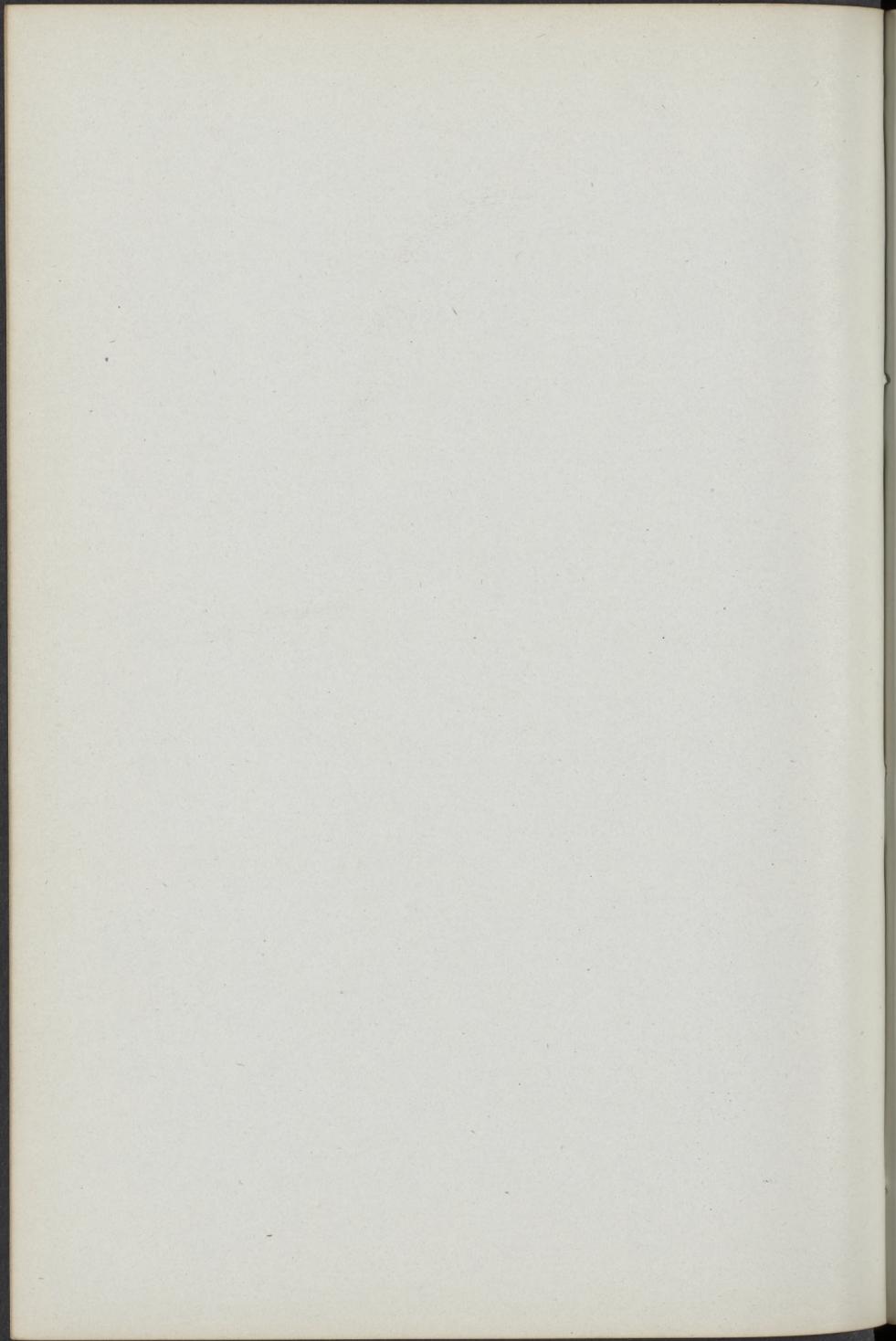












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